Railway Age

DAILY EDITION

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EDITORIAL

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Get Ready for Big Business

Freight car loadings are already surpassing the records of corresponding weeks of previous years. The freight car surplus is steadily diminishing. Activity in the ordering of railway supplies and equipment in recent weeks is being reflected in the basic materials industries. General business is on the upgrade. Confidence does not seem to be greatly disturbed by the numerous investigations in Washington. Labor conditions on the railroads are comparatively favorable. Presidential election years in the past have been good ones for the railroads from a traffic standpoint. The prospects are for a big business for the railroads this year. They are in better shape to care for the business than they were a year ago; at least so far as facilities and equipment are concerned. Last year an intensive effort was started early to rally the resources of the roads to meet the impending crisis. Shippers co-operated also and the peak load was spread over a long period. What will happen this year? Will the shippers ease off in their efforts because of the successful way in which their needs were met last year? Will the railroads, because of that success, be lulled into a mistaken sense of security? If they fail to meet the larger demands this year, what will be the reaction on the part of the government ownership advocates? The issue is so important that intelligent interest and enthusiasm must be mobilized among all the railroad employees in all departments. Only in this way can the best use be made of the available facilities and equipment—without it, failure may result. Is it not high time that goals were established and departmental activities speeded up and coordinated so that the organizations as a whole will function to the best advantage?

The Exhibit Is for Exhibits

The exhibit of the National Railway Appliances Association is an established business institution with clearly defined policies that can well be expressed in the one word, "service." Thanks to the high standards it has set during the course of its fifteen previous displays at the Coliseum, the exhibit has become the mecca of railway men from all parts of the country and it attracts an attendance by no means limited to that brought out by the conventions held concurrently in this city. The association has clearly evinced its purpose of serving these visitors to the utmost of its ability. This was brought out clearly in President Shugg's address before the annual meeting of the association yesterday morning in which he touched upon one of the most difficult problems which confronts the association each year. Lack of adequate space in the Coliseum has made it impossible to accommodate all who desire to present exhibits. This, he said, imposes a special responsibility on those who are so fortunate as to be allotted space. This space, he said, should be used to the utmost in presenting displays of materials and equipment which the visitors desire to see. The use of this space for the holding of receptions is entirely foreign to the motives responsible for the presentation of this

valuable exhibit. This is a point which may well receive the serious consideration of all those who participate in the work of the National Railway Appliances Association.

Does the A. R. E. A. Attempt Too Much?

NO ASSOCIATION of railway officers works harder than the American Railway Engineering Association. Other organizations may prepare and carry out equally extensive programs, but seldom does a convention schedule represent such a large volume of intensive and painstaking work, carried on in committees for months in advance of the annual meeting. As outlined on another page of this issue, the A. R. E. A. has been committed since its inception to the conduct of its work through committees. In the start, there were only 14 standing committees, but from time to time, as conditions demanded, others have been added until now there are 23, only one having been abandoned as having outlived its usefulness. As a result the three-day program must now be so subdivided as to allot a reasonable amount of time to the work of 23 committees instead of to only 14, as was the case at the first two conventions.

It would be unfortunate if the program should become so congested as to lead to curtailment of discussion, for this frequently forms one of the most valuable phases of the program, not only by offering the members an opportunity to secure further information from those present but also by bringing out additional information on the subject. Neither does it appear advisable to reduce the number of committees or to curtail their reports, for their contributions are of the greatest value and the number of subjects to be considered may be expected to increase as maintenance practices become more complex. This is a problem that calls for serious study.

After a Quarter of a Century

AS THE TWENTY-FIFTH annual convention is called to order it is not out of place to reflect on the work which the American Railway Engineering Association has done during the quarter of a century since the first informal conference was held in the offices of the *Railway Age*. That the association has exceeded the fondest hopes of those who participated in its organization and gave so freely of their time in its earlier years, is no longer open to question. The association has adhered closely to the outline and plan of work formulated at its inception and for this reason the results which have been accomplished reflect great credit on those who laid the foundation on which the present association has been built.

The American Railway Engineering Association is unique among railway organizations. One of its outstanding characteristics has been the steadfastness with which it has adhered to its work. It is known among associations as a hard working organization. No time is set aside on the program for play, but the conventions are businesslike throughout, with long morning and afternoon sessions and without excursions or relaxation of any character.

The association is also unique in the nature of its organization for the performance of work. This is conducted through committees, of which there are now 24 standing and 2 special. These committees in turn are divided into subcommittees which are charged with the investigation of specific problems, which studies require numerous meetings, voluminous correspondence and extended investigation. The character of the reports which are presented on the floor of the convention is a reflection of the thorough study and consideration given these subjects by the committees. But even this is not enough, for the reports are considered at length at the convention and if not satisfactory to the majority of those present are referred back for further consideration before the association is willing to accept the conclusions for incorporation in its manual of recommended practices.

Is There Sufficient Interest?

THE PROGRESS which has been made in recent years in the development of railway appliances is not always appreciated because of the pressure under which railway officers are working. There is little time for retrospection—today and tomorrow are the important factors. For that reason there has been a tendency for some members of the A. R. E. A., either to pass up the exhibits or to make only a superficial inspection of the large variety of equipment which has been gathered at the Coliseum. Although many members make it a practice to spend considerable time in inspecting the appliances and materials on display, there is still a reasonable doubt whether sufficient time is devoted to this purpose by other than a few. It would seem that many think that there is only "the same old equipment" to be seen. No assumption could be farther from the truth, for as indicated in the detailed report of the exhibit on another page, more than 100 new devices are being shown this year.

The increase in the variety of railway appliances has been gradual, but nevertheless unmistakable in its character and effect. Some have felt that this increase has been too gradual, and there is some merit to that contention. But whatever may be the opinion in this regard, it must be acknowledged that the development has been along sound lines and that the appliances now being manufactured are filing a real need. It is in this connection that the importance of the exhibit of the National Railway Appliances Association becomes truly apparent. First, there is the opportunity for the railway man whose road has not been able or entirely justified heretofore in making other than the most limited expenditures for labor saving or other mechanical appliances to look over the equipment that he needs, and to make an accurate estimate of the relative merits of each type, from the standpoint of his road and his organization. Second, there is the same opportunity for the man who, because of the exigencies of his road, must increase the amount of his equipment and in addition secure newly developed appliances to aid in the solution of newer and more pressing problems.

It is this opportunity to see and inspect the *actual* appliances in their latest and most improved forms, to talk with and question the representatives of the manufacturers, either alone or in the company of other railway men, that is of real importance. Railway progress depends more and more on the intelligent use of mechanical appliances, the development of which is in turn dependent upon the railways. The two are inter-related in such a way that there rests with the railway officer a real duty to know thoroughly the railway appliance field. His road needs the benefit of well-formed judgment of the merits and advantages of the different types of equipment now available. It also needs the benefit of his judgment and experience in the guidance of possible future developments in the appliance field, for, in the end, it is the railways that must use them. The importance of a thorough study of the exhibits cannot be urged too strongly, for it is a liberal education in itself.

An Early Start

The attention of the members of the American Railway Engineering Association is called to the fact that the convention will be called to order promptly at nine o'clock this morning. In view of the heavy program which is to be presented, it is to be hoped that the members will make a special effort to be present at that hour.

* * *

The Board of Direction of the A.R.E.A. met in its final session of the year yesterday to complete the preparations for the convention and transact other routine business.

* * *

The special committee on Highway Crossing Protection of the Signal Section, A.R.A., will hold a meeting at the Drake hotel this morning to consider suggestions made with reference to its report. The report deals with requisites for highway crossing signals, information on the use of reflectors, typical circuits and code on colors for traffic signals.

* * *

More than usual interest was shown yesterday in the announcement that Tom Windes has been appointed general sales manager of the Aluminate Sales Corporation, Union Stock Yards, Chicago, both because of Mr. Windes' wide acquaintance among railway men and because of the entrance of this company into the water treating field. This company has undertaken the distribution of aluminate sodium, now being manufactured on a commercial scale for water softening. Mr. Windes, until his connection with this corporation, was manager of the railroad department of the International Filter Company, Chicago, and has been engaged in water softening work for many years, having charge of water softening on the Vandalia, now the St. Louis division of the Pennsylvania, from 1906 to 1909, and thereafter representing successively the Kennicott Company, the L. M. Booth Company and the Refinite Company previous to his connection with the International Filter Company.

Special Committee On Steel Railway Bridge Specifications Holds Meeting

A meeting of the Special Committee on Specifications for Steel Railway Bridges, appointed by the American Engineering Standards committee for the purpose of considering the approval of existing standards, held its first meeting yesterday afternoon in Room 1120, Congress hotel. This committee, of which Charles Rufus Harte is chairman, has been appointed to consider existing specifications for steel railway bridges, looking toward their adoption by the American Engineering Standards Committee. The specifications submitted to the special committee were the General Specifications for Steel Railway Bridges adopted by the American Railway Engineering Association in 1920, the Specifications for Bridge Design and Construction of the American Society of Civil Engineers and the Specifications for Movable Railway Bridges of the American Railway Engineering Association. The committee consists of 17 members, representing the American Engineering Standards committee, the American Railway Engineering Association, the American Society of Civil Engineers and other interested organizations.

The meeting held yesterday for the purpose of initiating the work was attended by H. B. Seaman and C. R. Harding, representing the A. S. C. E.; B. R. Leffler and O. E. Selby, representing the A. R. E. A.; L. H. Miller, representing the American Institute of Steel Construction; H. C. Tammen, representing the American Society of Mechanical Engineers; E. F. Kelly, representing the Department of Agriculture, Bureau of Roads, and W. S. Lacher, representing the *Railway Age*.

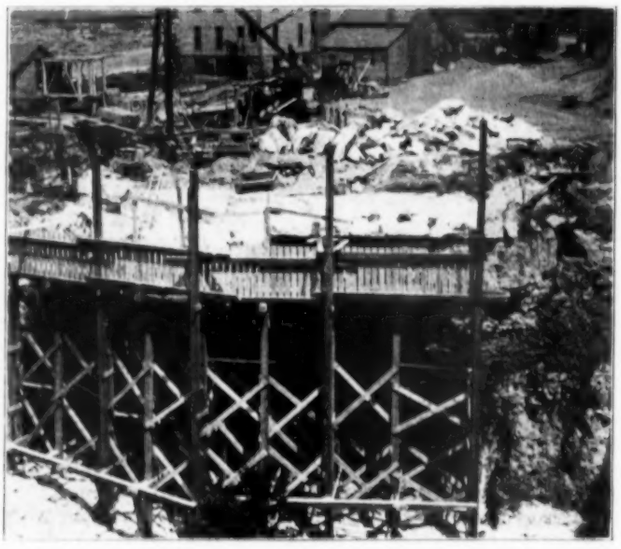
A. H. Smith Dies

Early arrivals at the convention were shocked to learn Sunday morning of the sudden death of A. H. Smith, president of the New York Central lines, as the result of a fall from a horse while riding in a park in New York city on Saturday afternoon. His death is a serious loss to the railway industry of the country, particularly because of the aggressiveness which has characterized his administration of the New York Central properties. Although Mr. Smith entered railway service as a messenger on the Lake Shore & Michigan Southern (now the New York Central, Lines West) in 1879, he was employed in a bridge gang and later as a bridge gang foreman for a number of years. In October, 1890, he was promoted to superintendent of the Kalamazoo division, after which he served in the operating department as general superintendent, as general manager of the New York Central & Hudson River, and since January 1, 1914, as president of the New York Central lines, with the exception of the period from January 18, 1918, to May 31, 1919, when he served as regional director of the Eastern region, United States Railroad Administration.

Something Different

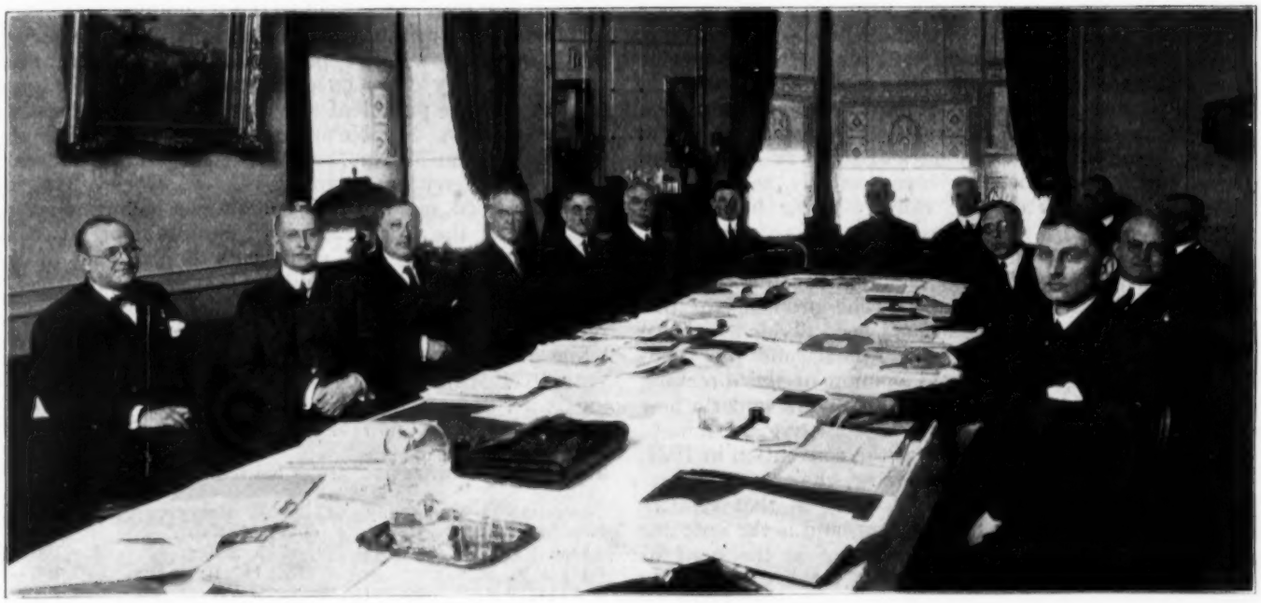
Elaborate plans are being made for "something different" for the annual dinner which will be held in the Gold room of the Congress hotel at 7 o'clock tomorrow evening. A committee has been working arduously on preparations for this dinner for weeks and has developed a program which will be unique in the annals of this association. The speakers will include: Sir Henry W. Thornton, K. B. E., chairman of the board of directors and president of the Canadian National railways, Montreal; Fred W. Sargent, vice-president and general counsel of the Chicago & Northwestern and James Schermerhorn, humorist, lecturer and writer and former editor of the Detroit Times. Mr. Sargent will speak upon Transportation in Relation to Proposed Legislation, while Mr. Schermerhorn has selected as his subject The Auditorial We. Important attractions will include the "Pullman Pohtahs Quahtet" and a famous beauty chorus.

The interest in this dinner is evidenced by the fact that advance reservations have exceeded 400, insuring that the capacity of the Gold room will be taxed. An effort will be made to accommodate all who desire to attend, although, to be sure of accommodations, tickets should be purchased at the earliest possible date.



Michigan Central Makes Progress on Niagara Arch

Active work has been in progress since May, 1923, on the new 550-ft. double-track steel arch bridge which will span the Niagara Gorge between the Grand Trunk arch and the Michigan Central cantilever bridge at Niagara Falls. The approaches and skew backs for the arch are practically complete, while the back stays required for the cantilever erection of the main span will soon be securely anchored into the rock ledges in tunnels driven into the face of the bluffs for this purpose. This proved to be one of the most difficult parts of the project because of the presence of water and the difficulty encountered in disposing of the spoil.



The A.R.E.A. Board of Direction in Session at the Congress Hotel Yesterday

Twenty-Five Years of Active Committee Work

A. R. E. A. Has Obtained Remarkable Results Through a Well Defined Subdivision of the Activities

"COMMITTEE WORK as conducted by the American Railway Engineering Association is unique and constitutes the keynote of the organization, giving it life, vitality and effectiveness." This statement, taken from the report of E. H. Fritch, secretary of the association, comprises an excellent epitome of the underlying basis upon which the association has been built and upon which its success is founded. It is therefore in keeping that the activities of these committees, their history and personnel, be reviewed briefly upon the occasion of the twenty-fifth consecutive convention.

The committees have not only afforded a field of definite activity for a considerable portion of the membership, but they have also provided a form of apprenticeship whereby the capabilities of the members for increased responsibility in the association's affairs could be adequately judged. It has been natural, therefore, that men have advanced step by step from committee member to sub-committee chairmen, general vice-chairmen and chairmen, and then to director, vice-president and president. How thoroughly this policy has been pursued is to be noted in the roster of committee chairmen during the last 25 years, wherein are found such well known names as McNab, Downs, Trimble, Kelley, Churchill, Cushing, Ray, Baldwin, Wendt, Sullivan, Stimson, Kittredge and Lee. Nor should we overlook J. L. Campbell, who served for nine years as vice-chairman of the Committee on Water Service, but who repeatedly refused the chairmanship because of the remote location of his headquarters.

As stated by Secretary Fritch, "It was the judgment of the founders that the best results would be obtained through the medium of standing and special committees." Thus we find that reports were presented by 14 standing committees at the convention in 1900. These committees and their chairmen were as follows: Roadway, J. B. Berry; Ballast, R. Montfort; Ties, Julius Kruttschnitt; Rail, Robert Trimble; Track, E. A. Hanley; Buildings, W. G. Berg; Wooden Bridges and Trestles, Onward Bates; Masonry, W. L. Breckinridge; Signs, Fences and Crossings, H. Bernstrom; Signals and Interlocking, H. D. Miles; Records and Accounts, H. F. White; Rules and Organization, D. D. Carothers; Water Service, W. E. Dauchy; and Yards and Terminals, A. W. Sullivan. Two years later the Committee on Iron and Steel Structures, with J. P. Snow as chairman, presented its first report, while in 1904, the Committee on Economics of Railway Location made its first appearance under the leadership of William McNab. Five years elapsed before any additional committees were heard from and then, in 1909, the initial reports were presented by the Committee on Wood Preservation, with A. L. Kuehn as chairman; the Committee on Electricity, under the leadership of George W. Kittredge; and the Committee on Uniform General Contract Forms, headed by W. L. Breckenridge.

Taking the cue from President Roosevelt, who had called atention with characteristic forcefulness to the rapid dissipation of our country's natural resources, the association authorized the organization of a Committee on Conservation of Natural Resources, which appeared before the convention for the first time in 1911, with A. S. Baldwin as chairman. This committee performed a valuable service in pointing to the railroads' part in the movement for conservation and, having fulfilled its usefulness, was disbanded following the convention of 1921. This was the only standing committee organized by the association which has ever been discontinued.

No further committees were organized until 1917, when, sensing the opportunity for further service, two new committees were organized to meet the requirements of two intensive problems of the day. As a consequence of the European war and our participation in it, the rail-

roads were confronted with an acute shortage of labor and an enormous increase in traffic which pointed clearly to the need of more scientific methods in the conduct of transportation. It was to meet the needs of this situation that the Board of Direction authorized the organization of the Committee on Economics of Railway Operation and the Committee on Economics of Railway Labor, with F. W. Green and E. R. Lewis, respectively, as chairmen.

An enormous increase in railway traffic has carried with it a demand for added investment in fixed properties, and in no branch of the service has this requirement been more intensified than in the facilities for the care and repair of locomotives and cars. The problems of this branch of railway engineering had been divided between the Committee on Yards and Terminals and the Committee on Buildings, but in the opinion of the directors, it seemed advisable to concentrate this work under a new committee, that on Shops and Locomotive Terminals, which presented its first report at the convention in 1921, under the direction of F. E. Morrow, chairman.

The latest committee to be formed is that on Co-operative Relations with Universities, and is the outcome of several years of discussion pointing to the need of coordinated effort which will insure the better training of technical graduates for railroad work as well as the development of ways and means whereby the railroads may offer greater inducements for the graduates to enter railway service. The first report of this committee will be presented at this convention, with R. H. Ford as chairman.

Special committees have been appointed from time to time to study various problems of passing importance. Among these was the Committee on Classification of Tracks, which submitted reports in 1904, 1905 and 1906, with C. S. Churchill as chairman; the Committee on Cement, which presented a report in 1910 under the direction of Howard G. Kelley; the Committee on Brine Drippings in Refrigerator Cars, which presented a report in 1911 with J. C. Mock as chairman; the Committee on Lumber Grading Rules, which presented nine reports between 1911 and 1919, respectively, W. H. Sellew being chairman of this committee for the first year and Dr. H. Von Schrenk for the succeeding nine years.

Occasionally problems arise which require the co-operative activities of several or of all of them. This led to the organization of the Committee on Standardization in 1919 and the Committee on Clearances in 1923. The first of these, which has been under the direction of E. A. Frink since its inception, will present its fifth report this year while the Committee on Clearances, of which O. F. Dalstrom is chairman, is pursuing studies which concern all the committees that have to do with the construction and maintenance of roadway, station and terminal structures.

The association has also done excellent work in its co-operation with other organizations in the prosecution of scientific studies. It has had representation on the Joint Committees on Concrete and Reinforced Concrete, and the joint committees on Portland Cement. It also plays the foremost part in the Joint Committee on Stresses in Railroad Track, in which it shares responsibility with the American Society of Civil Engineers. A. N. Talbot has been chairman of this committee since its organization in 1915, and will present the tenth report at the present convention.

Not the least among the advantages of the association's policy of conducting its affairs through the committees, is the opportunity it affords for active participation on the part of its individual members. Evidence of this is to be had in the fact that the 24 standing committees have had 163 chairmen. Since in only ten instances has a man served at the head of more than one committee, a total of 153 members of the association have served in chairmanships. The periods of service have been varied, in many cases covering only for a single year, but the average period of service for all committees has been 3.16 years. Notable among long service records was that of William McNab, who served a total of 11 years on three different committees. A. F. Dorley had the longest record on a single committee, having directed the work of the Water Service committee for 10 years. G. W. Kittredge served nine years as chairman of the Committee on Electricity and E. B. Cushing nine years on the Committee on Ties. G. J. Ray has a service record of eight years on two committees, Rail and Track, while J. V. Hanna and H. E. Hale each served eight years as chairman of the Committee on Ballast. Following is a roster of the committee chairmen from 1900 to date:

Standing Committees	Chairman	Year
Committee I—Roadway	J. B. Berry	1900
	W. McNab	1901–04
	H. J. Slifer	1905–08
	G. H. Bremner	1909–11
	J. E. Willoughby	1912
	W. M. Dawley	1913–19
	J. R. W. Ambrose	1920–22
	C. M. McVay	1923–24
Committee II—Ballast	R. Montfort	1900
	F. T. Hatch	1901
	E. Holbrook	1902
	H. U. Wallace	1903
	J. V. Hanna	1904–11
	H. E. Hale	1912–19
	H. L. Ripley	1920–21
	F. J. Stimson	1922–24
Committee III—Ties	J. Kruttschnitt	1900–01
	E. B. Cushing	1902–10
	E. E. Hart	1911
	L. A. Downs	1912–17
	F. R. Layng	1918–21
	W. A. Clark	1922–24
Committee IV—Rail	R. Trimble	1900–03
	W. R. Webster	1904–08
	D. D. Carothers	1909
	C. S. Churchill	1910–12
	W. C. Cushing	1913
	J. A. Atwood	1914–16
	J. D. Isaacs	1917–18
	G. J. Ray	1919–24
Committee V—Track	E. A. Handy	1900
	H. F. Baldwin	1901
	W. B. Poland	1902
	Garrett Davis	1903–06
	L. S. Rose	1907–10
	C. E. Knickerbocker	1911
	J. B. Jenkins	1912–16
	G. J. Ray	1917–18
	W. P. Wiltsee	1919–24
Committee VI—Buildings	W. G. Berg	1900
	H. W. Parkhurst	1901–04
	A. R. Raymer	1905–07
	O. P. Chamberlain	1908–11
	Maurice Coburn	1912–14
	M. A. Long	1915–20
	W. T. Dorrance	1921–24
Committee VII—Wooden Bridges and Trestles	Onward Bates	1900
	W. A. McGonagle	1901–02
	D. B. Dunn	1903–04
	I. O. Walker	1905
	F. E. Schall	1906
	H. S. Jacoby	1907–11
	C. C. Wentworth	1912
	I. L. Simmons	1913
	E. A. Frink	1914–18
	W. H. Hoyt	1919–22
	A. O. Ridgway	1923–24

Standing Committees	Chairman	Year
Committee VIII—Masonry	W. L. Breckinridge	1900–01
	E. P. Dawley	1902
	H. F. Kelley	1903
	E. C. Brown	1904–06
	A. O. Cunningham	1907–10
	W. H. Petersen	1911
	G. H. Tinker	1912–14
	F. E. Schall	1915–16
	F. L. Thompson	1917–19
	J. J. Yates	1920–22
	C. C. Westfall	1923–24
Committee IX—Signs, Fences and Crossings	H. Fernstrom	1900
	D. Bontecou	1901
	A. S. Baldwin	1902–05
	W. D. Williams	1906–11
	C. H. Stein	1912–14
	W. F. Strouse	1915–19
	A. Crumpton	1920–21
	Maro Johnson	1922–24
Committee X—Signals and Interlocking	H. D. Miles	1900–01
	J. C. Mock	1902–05
	C. A. Dunham	1906
	W. A. D. Short	1907
	A. H. Rudd	1908–13
	T. S. Stevens	1914–15
	C. C. Anthony	1916
	J. A. Peabody	1917–20
	W. J. Eck	1921–23
	F. B. Wiegand	1924
Committee XI—Records and Accounts	H. F. White	1900–01
	F. E. Bissell	1902
	E. F. Wendt	1903–07
	H. R. Safford	1908–11
	H. J. Pfeifer	1912–13
	W. A. Christian	1914–20
	H. M. Stout	1921–24
Committee XII—Rules and Organization	D. D. Carothers	1900–01
	J. A. Barnard	1902–03
	R. H. Aishton	1904–06
	G. H. Webb	1907
	R. C. Barnard	1908–09
	J. O. Osgood	1910–13
	G. D. Brooke	1914–16
	C. Dougherty	1917
	Jos. Mullen	1918
	W. H. Finley	1919–20
	W. C. Barrett	1921–24
Committee XIII—Water Service	W. E. Dauchy	1900–01
	O. D. Richards	1902
	J. L. Frazier	1903–04
	G. M. Davidson	1905–06
	A. K. Shurtleff	1907–08
	C. L. Ransom	1909-11
	Robt. Ferriday	1912–13
	A. F. Dorley	1914–23
	C. R. Knowles	1924
Committee XIV—Yards and Terminals	A. W. Sullivan	1900–01
	C. S. Sims	1902–03
	W. G. Besler	1904–05
	J. A. Atwood	1906
	F. S. Stevens	1907–11
	C. H. Spencer	1912–14
	E. B. Temple	1915–18
	B. H. Mann	1919–21
	A. Montzheimer	1922–24
Committee XV—Iron and Steel Structures	J. P. Snow	1902–05
	C. D. Purdon	1906
	J. P. Snow	1907
	J. E. Greiner	1908–10
	C. H. Cartlidge	1911–12
	A. J. Himes	1913–17
	O. E. Selby	1918–22
	O. F. Dalstrom	1923–24
Committee XVI—Economics of Railway Location	W. McNab	1904–08
	A. K. Shurtleff	1909–13
	R. N. Begien	1914
	J. G. Sullivan	1915–18
	R. N. Begien	1919–20
	C. P. Howard	1921
	A. S. Going	1922
	E. C. Schmidt	1923
	E. E. King	1924
Committee XVII—Wood Preservation	A. L. Kuehn	1909
	W. K. Hatt	1910–11
	Earl Stimson	1912–18
	C. M. Taylor	1919–23
	S. D. Cooper	1924
Committee XVIII—Electricity	G. W. Kittredge	1909–17
	E. B. Katte	1918–24
Committee XIX—Conservation of Natural Resources	A. S. Baldwin	1911
	E. O. Faulkner	1912
	Wm. McNab	1913–14
	C. H. Fisk	1915–16
	R. C. Young	1917–20
	W. F. Ogle	1921
	W. L. Breckenridge	1909
Committee XX—Uniform General Contract Forms	E. F. Ackerman	1910
	J. C. Irwin	1911–12
	W. G. Atwood	1913–14
	E. H. Lee	1915–20
	W. D. Faucette	1921–24
Committee XXI—Economics of Railway Operation	F. W. Green	1918–20
	L. S. Rose	1921–22
	G. D. Brooke	1923–24
Committee XXII—Economics of Railway Labor	E. R. Lewis	1918–20
	C. E. Johnston	1921–23
	C. C. Cook	1924
Committee XXIII—Shops and Locomotive Terminals	F. E. Morrow	1921–24
Committee XXIV—Co-Operative Relations with Universities	R. H. Ford	1924
Special Committees		
Classification of Track	C. S. Churchill	1904–06
Cement	H. G. Kelley	1910
Brine Drippings from Refrigerator Cars	J. C. Mock	1911
Stresses in Railroad Track	A. N. Talbot	1915–24
Lumber Grading Rules	W. H. Sellew	1911
	H. Von Schrenk	1912–19
Standardization	E. A. Frink	1920–24
Clearances	O. F. Dalstom	1924

The Chulitna River, Along the Alaska Railway

Engineers Face Large Improvement Programs

Work Already Authorized in Addition to That Carried Over From Last Year Indicates a Busy Season

AT THE OPENING OF NO PREVIOUS convention of the American Railway Engineering Association within the last decade has the outlook for an active season of construction and maintenance of way work been more favorable than it is at this time. Except for uncertainty as to the action that Congress may take, conditions in the railway industry are more stable than they have been for a long time. The heavy traffic which prevailed during 1923 shows no indication of letting up, yet the roads are meeting all demands for service. The relations between the roads and their employees are on a more satisfactory basis than at any time since the beginning of federal control. The public is more friendly to the roads than it has been for a long time. As a result, the managements are now able to give their attention more fully to the problems incident to the operation of their properties and are able to develop their plans with greater assurance of their ability to carry them through to completion.

An outstanding feature of the present situation is the large volume of traffic which is moving. The record-breaking year of 1923 came to a close with a decline in coal traffic induced by the open weather of the early winter, which decline continued until the middle of January. The advent of cold weather over a large part of the country in the opening weeks of the year stimulated the demand for fuel and since that time the volume of traffic handled by the roads has exceeded all records for this season of the year. As a result, the number of cars loaded during the first eight weeks of this year aggregated 6,979,568, an increase of 244,004 over the same period in 1923 and an increase of 1,116,563 over the same period in 1922. Since the ability of the roads to finance improvements depends on their credit and their credit depends on their earnings, it is evident that this continued heavy flow of traffic is a favorable influence of no small value.

This heavy traffic also bears another relation to the improvement program by reason of the pressure which it exerts for increased facilities and for more liberal expenditures for maintenance. While the record traffic of last year was handled with a freedom from congestion and delay which surprised even the most ardent advocates of the roads, this was made possible only by the exercise of the greatest care at many points where the facilities were taxed beyond the limit of economical operations. At such points expenditures to provide greater capacity will yield large returns in decreased costs of operation and will also add to the capacity of the entire railway. This heavy traffic also increases the wear and tear on the property which must be made good by more liberal maintenance.

While 1923 was an active year for railway improvement work, 1924 will be still more active. A year ago the roads awoke to the fact that they were facing greater demands from the shipping public than they had ever been called upon to meet. They were just emerging from the shopcrafts strike and their equipment was not in normal condition. Realizing that the most effective way to demonstrate the efficiency of private management was to render adequate service, the roads drafted a vigorous operating and improvement program, in the prosecution of which more than $1,200,000,000 was spent in the United States and Canada for additions and improvements to facilities, entirely aside from similarly liberal sums for the upkeep of the existing facilities. More than $400,000,000 of this was expended for improvements in roadway facilities, although, since increased capacity could be secured most quickly by the purchase of cars and locomotives, the largest part of last year's expenditures went for equipment.

Now that this crisis of a peak traffic has been passed safely and the roads have demonstrated that they possess facilities capable of handling any traffic that may reasonably be expected this year, they are giving more attention to those expenditures which will reduce their costs of operation and it is improvements of this kind which characterize their 1924 budgets. These include the substitution of modern for obsolete equipment and the addition of many appliances to existing equipment, but in still larger measure they contemplate the removal of restrictions to capacity in the form of inadequate engine terminals, classification yards and shop facilities, the construction of additional main tracks, the reduction of grades, the installation of signals, etc. This tendency was shown conclusively in a study of the budgets which leading roads, whose mileage comprises more than 40 per cent of that of the United States, furnished the *Railway Age* at the beginning of the year. This analysis showed that while the expenditures then authorized or definitely planned equalled those on the same date of the previous year, the appropriations assigned to roadway improvements were approximately double those of the previous year. In other words, while the question of capacity was uppermost in the minds of executives last year, the reduction of transportation costs has now become paramount.

This improvement program is not confined to any one portion of the country or any one group of roads. Thus, the Santa Fe has authorized expenditures aggregating more than $80,000,000 on its lines through the southwest, while the Pennsylvania will spend more than $50,000,000 in the east. The Southern Pacific has authorized improvements which are estimated to cost nearly $50,000,000 in the far west, while the Southern is undertaking a number of large projects in the southeast. The Illinois Central plans to spend more than $45,000,000 this year largely between Chicago and Memphis, while the Union Pacific has work involving the expenditure of more than $14,000,000 under way in the west; the Norfolk & Western a similar amount in the east and the New York Central has carried over more than $18,000,000 in unfinished work.

Of particular interest are the new lines which have been authorized. The most expensive is the Natron cutoff of the Southern Pacific in southern Oregon, 118 miles long and involving the expenditure of $18,000,000, contracts for the construction of the larger part of which have been let since the first of the year. Almost an equal expenditure is involved in the Illinois Central's projected line between Edgewood, Ill., and Fulton, Ky., 175 miles long, which the Interstate Commerce Commission authorized for the second time a few weeks ago and on which it is planned to undertake work early in the spring. The Union Pacific is planning the construction of a branch line from Rogerson, Idaho, south 94 miles

to Wells, Nev., this year and is also reported to be considering the construction of a cutoff from Fort Collins, Colo., to connection with its main line west of Cheyenne, Wyo., a distance of more than 65 miles, construction of the first 18 miles of which has been formally announced. Similar in many respects to this work, since it involves the construction of more than 47 miles of new line, is the project which the Central of Georgia announced within the last three weeks for the reconstruction of 100 miles of its Columbus-Birmingham line.

Among the more important second track projects which have been announced in recent weeks are 44 miles on the Santa Fe between Hicks, Cal., and Summit; 29 miles on the Central Pacific line of the Southern Pacific involving very heavy work across the summit of the Sierra Nevada mountains; 13 miles on the Chicago, Rock Island & Pacific in Kansas, etc. Among the more important bridge projects in contemplation is a new structure which the Santa Fe proposes building across the Mississippi river at Fort Madison, Iowa, which is estimated to cost more than $6,000,000. The Michigan Central is proceeding with the erection of its noteworthy structure across the Niagara river gorge at Niagara Falls, N. Y., while the New York Central will complete its high river bridge across the Hudson river south of Albany, N. Y., a part of its Castleton cutoff, this year.

Owing to the attention which railway officers of all departments are giving to the more intensive utilization of locomotives, improved facilities for the care of this equipment are under consideration at many points. Prominent among programs of which character are those of the Southern, which awarded contracts within the last month for extensive facilities at Birmingham, Ala., and has large projects in contemplation at Spencer, N. C., Knoxville, Tenn., and other points. The Wabash has announced its intention to spend approximately $1,000,000 for new shops and yards at Peru, Ind., while it will be required to spend a similar amount to replace buildings destroyed by fire at Decatur late last month. The Southern Pacific is prosecuting an extensive shop improvement program at Los Angeles, while the Northern Pacific plans to spend $600,000 at Brainerd, Minn.

While the above refers primarily to construction rather than maintenance work the volume of construction work has long been considered an index of the liberality of maintenance expenditures and this holds true this year. Confirmation of this is afforded by the orders for rails and track fastenings. The tonnage of rails rolled last year exceeded the average for the last 10 years by more than 20 per cent. In spite of that fact the orders which have been placed by a number of leading roads this year are considerably larger than those rolled in 1923, while the aggregate of all of the orders placed this year by the roads whose requirements have been made public exceeds that of 1923. A similar condition prevails with reference to track fastenings. The orders which have been placed by several roads established new high figures with the result that the steel mills are in general booked far into the season. With the indications pointing to adequate supply of reasonably efficient labor, it should be possible for the roads to go far towards the completion of their maintenance as well as their improvement programs this year.

Determining the Character of Future Engineers*

College Courses Need Extensive Revision in Order to Keep Up With the Trend of the Times

By Henry E. Riggs
Professor of Civil Engineering, University of Michigan, Ann Arbor, Mich.

During the past few months the engineering colleges of the United States have been strongly inclined to pause in their work and take an inventory. They are asking the question, is our training for the profession of engineering the proper preparation for the engineers of the future?

There is a well defined conviction among college men that some more or less radical changes must be brought about in our curricula, that at least one year must be added to the course, and that some of the things which we have devoted much time to in the past are no longer as basic and essential as they were. The demands upon the profession of engineering in America have changed very materially within the past 20 or 30 years. I think that it is not too much to say that the United States hardly commenced, as a nation, to pass out of the period of the pioneers until toward 1890. The specific demand for engineers in the period from 1865 to 1890, at the time when most of the engineering schools were established, resulted in curricula which tended to produce technicians, rather than broadly trained men capable of assuming large responsibilities in finance and administration.

These old curricula are still persistent and we are not doing justice to our present students, the future engineers. I am of the opinion that the engineering course should be broadened. More work should be included in English composition in the form of report writing, and of careful grading of the written work submitted in technical courses. There should be a good foundation in economics, not some short course given for engineers, but enough time for a real course. In the same way a good course in accounting belongs in an engineering school and is just as fundamental as drawing.

Too Much Time on Specialties

These things belong in the four-year engineering course, and way should be made for them by eliminating all specialized courses and reducing the time given to such work as surveying. For instance, we have required *every civil engineering student* at Michigan to take 17 hours of surveying (the equivalent of one-eighth of his course), a requirement which dates back to the period from 1870 to 1885 when technicians were needed. We have just cut this to 7 hours, leaving ample opportunity for more work in the subject as an elective, and for the very few who will wish to specialize in it to do so. This time and some additional time from specialized civil engineering will be given largely to economics.

Next year we propose to offer a fifth year in the Graduate School in which a man may take his civil engineering work in either structural, hydraulic, sanitary, transportation or highway engineering, and along with this selected group of professional subjects he will be required

*An abstract of an address given before the Western Society of Engineers on Monday evening.

to elect advanced work in such subjects as finance, marketing, labor problems and other courses in advanced economics, or other absolutely non-technical fields.

We believe we are taking a forward step. Some of the reasons which have led us to this step in advance of the general movement, which is certainly coming, may not be amiss. The world looks to the engineer as the designer, builder and operator of our industrial, public utility and transportation agencies. The public has a tendency to think that he is not qualified to handle the financial problems or to be placed in charge of its management.

It is an undoubted fact that many engineers have lacked the training in business and law desirable for these classes of service, and, also, that, due to the kind of training they have received, largely in courses dealing with the solving of problems, they have not learned how to read broadly and, therefore, but a small percentage of them have made good the deficiency in the college training. It is also true that few of them are convincing speakers or fluent writers.

The engineer is called upon to *design*. The problem of design is vastly different from that presented a quarter of a century ago. Business in all lines is of a magnitude absolutely undreamed of in 1885 or 1890. The railroad may be taken as an illustration. When I was in college we were building new railroads at the rate of 5,000 to 10,000 miles of line per year. Today the railroads are built. The problems now are those of reconstruction along lines that will afford the greatest possible economy of operation; the development of motive power and the electrification of parts of the lines so that a given mileage of track can be made to carry the greatest possible tonnage; the design of yards and terminals so as to reduce to a minimum the cost of switching and handling of freight at terminals; the building of every possible type of mechanical equipment which will with no increase in labor, increase the amount of work performed.

The whole subject of railroad design has been changed from the location of railroads on lines which would give reasonably cheap and economical construction costs, to the perfection of the transportation machine so that each ton transported should be carried at lower costs than was formerly done.

In other words, the constant tendency of the public and of the politician has been to force rates downward and the only possible way in which the railroad industry could survive was through development along lines of highest economic efficiency. The engineer needs to have a knowledge of the economic causes which have brought about this change. A mere technician who cannot grasp the real problem will not fill the bill.

The Problems of Construction Call for More Than Mere Technical Training

Construction is another task of the engineer. To be the master mind in our great construction enterprise he must know about the intricacies of finance, he must understand the organization of properties, and the methods of raising funds; he must understand marketing and the causes of price fluctuations; and he must understand labor. Then, too, he must have a knowledge of accounting. His work to such a great extent deals with properties whose accounting is prescribed that a general knowledge of modern accounting systems is absolutely essential.

The engineer, to be successful in the highest degree, should know why it is that we have had to develop the system of regulation of public utilities which we have today. He should fully understand the relationship which should exist between owner and consumer, as that relationship has been defined by the highest courts in a long series of decisions; he should fully and completely know what he is bound to do for the consumer, and what he has a right to demand of the consumer. Call it law, or economics, or engineering, as you please, it is a preparation for service which is today absolutely essential in the man who is going to make any large success in the management and operation of properties in the years to come.

Valuation an Important Problem of the Future

Allied with this subject, and growing out from it, are the subjects of valuation and of depreciation, which are taking so much time of the utility commissions and both time and money of the companies.

The engineer, more than anyone else, needs to know about these vital and important relationships which so intimately affect the great properties he had built. Here engineering and law, and economics and accounting are all interwoven. Some one needs to know. Some one needs to speak with authority. The engineer is the man who should be trained to do it.

I do not undervalue the training we have been giving students in mathematics, physics, mechanics, chemistry and other basic subjects upon which engineering science must be founded, but it is just as important that we build the same sort of a foundation in economics that we now do in physics; in accounting theory that we now do in mathematical theory; in psychology that we now do in chemistry and in public speaking and fluent writing that we now do in surveying or drawing.

Just as the great industry is called upon to perfect its output, to increase the quality of its service and to cut down the amount of its poor grade output, so is the college called upon to raise its standards of admission, stiffen up its requirements, bar out the men who are clearly unfit for engineering, and lengthen its course so that its graduates may have the same extent of technical and professional training as now, and along with it a broader education and a widened vision.

Discussion

Professor Riggs' paper was received with enthusiasm by those present and brought forth some interesting discussion. Among the speakers were Dean J. F. Hayford of Northwestern University; R. H. Ford, assistant chief engineer, Chicago, Rock Island & Pacific; F. E. Morrow, assistant chief engineer, Chicago & Western Indiana, and J. W. Lowell, Universal Portland Cement Company. The general trend of their remarks was in accord with Professor Riggs' views, but the note of warning was offered that the idea of generalization should not be carried too far.

Reinforced Concrete Piles Removed from the Galveston Causway After 12 Years' Service. Many Have Been Re-Used in Other Construction

Signal Section Makes Progress During Last Year

The Economies of Signaling Was Most Important Subject Studied During the Past Twelve Months

IT IS A LONG STEP from the signaling practices in vogue at the time of the formation of the old Railway Signaling Club in 1895 to those which prevail today. At that time, what was taken as the "last word" in signaling practice would now be considered obsolete, illustrating the rapid advancement in this branch of railroad work during the last 29 years. To the Signal Association belongs much of the credit for these results.

The Railway Signaling Club was formed for the "advancement of knowledge pertaining to the principles, design, construction, maintenance and operation of railway signaling appliances, by discussion, investigation and reports of the experiences of its members; and to provide a means for the exchange of ideas to the end that signaling practice may be systematized and improved." The increasing uniformity in signal systems and standardization of appliances probably mark one of the most distinct steps in railroad transportation today. A resume of the signal development shows how closely the conclusions reached by the section have followed the original requirements set up at the time of the organization of the Association in 1895.

During the year just closed the railroads have been shown many examples of what signaling has accomplished in facilitating traffic. By the use of different schemes of signaling, operation over many districts has been materially improved. Train dispatching has not only been simplified, but trains are handled better since the adoption of the practice of acting on signal indications.

Another important development of the past year is the increased interest shown in signaling by those engaged in this work, and the desire for personal advancement through study and through affiliation with the Signal section and its work. This is evidenced by the fact that more railroad affiliated and affiliated members have been added to the list than have been eliminated through deaths and resignations. It has required less effort to hold the membership practically intact during the past year than at any time since 1919, as those who have formerly shown a tendency to lose interest in the work have again become active.

The establishment of sectional committees as a part of the Signal section has also received considerable discussion during the year. The sectional committees were originally formed primarily to provide a means whereby the men in the field might become better educated through the discussion of subjects of interest to them at places easy of access. Some have felt that the discontinuance of these committees was a step backwards, but the section has not shared this view, in support of which the officers point to the fact that railroad affiliated memberships have not declined. The Signal section has discussed at length ways in which the interest of the men in the field may be held. It is recognized that it is of the utmost importance that these men, whose interest lies in railway signaling, be provided in some manner with ways and means to learn the many details of their work. The best way of developing an educational course has been debated at length. Years of observation have indicated that the newcomer needs to be encouraged. While he receives much help on the railroad where he is employed he may require still further assistance. The Signal section, in trying to solve this problem, has recognized the fact that many men, apparently, will not make an effort of themselves to seek knowledge, particularly when it is necessary for them to pay for this knowledge out of their own pockets. It has been suggested that one way to overcome this difficulty is to get volunteers to prepare good text books which can be made available for distribution. Such books could then be used to form a nucleus for schools which may be conducted by the signal supervisors on their different divisions.

It is the feeling that such a plan would be superior to sectional committees because the lines along which the educational work would be conducted should result in a desire on the part of many of the men to become interested in Signal section literature, and this should also lead them to make every effort to attend the meetings of the section.

The Work of the Committees

Irrespective of the fact that the time of many members of the section has been taken up largely during the past year with train control studies for the roads included in the train control order, and that this has interfered with committee work, excellent work has been done by the 12 regular and one special committees, as is evidenced by the reports included in the Advance Notice for the annual meeting. During the past year a number of the committees have been working on assignments of a technical nature, which are of interest more largely to the section itself. Among these may be mentioned several specifications, the preparation of standards, methods of making tests and instructions for the men in the field.

From the standpoint of operating men, the work done by the Economics committee, the Signaling Practice committee and the Special Committee on Highway Crossing Protection is of interest and value. While the engineering officers are also interested in the work of these three committees, their greatest interest lies in the work done by the last committee.

During the past year the Economics committee has made a study of the savings effected by the use of power switch machines for the operation of remote switches. In this connection, the railroads were asked for detailed information regarding the economic value of power switch machines at remote switches. This committee has shown the savings in time and coal made by eliminating the stopping and starting of trains through the use of the power operated switches and also the savings in wages of operators by consolidating the operation of the switches. During the latter part of the year this committee has also been working on a proposed method for the operation of a single track line by signal indication and has made a careful analysis of the operating conditions to be considered and those conditions which may constitute delays through all causes. In connection with this study, train charts have been worked up showing what results may reasonably be expected.

The Signaling Practice committee, during the past year, has been making a study of the elimination of derails at grade crossings. The conclusions reached, as reported in November, were that derails should not be used in

main tracks except where required by law or by decree of national or state public service commissions, in which case they are to be located in accordance with the requirements. It is also recommended that on heavy grades where some device is needed to check runaway trains or cars, properly designed deflecting tracks may be used.

The Special Committee on Highway Crossing Protection has been working during the past year on requisites for highway crossing signals, and a code of colors for traffic signals in which work it has also been cooperating with the American Engineering Standards Committee. The committee has also worked on the preparation of standard typical circuit plans and a standard disc for use with the wig-way signal. It has been investigating transmission values of lights and the reflectors which should be used in connection with the light signal as a highway crossing signal.

In passing, brief mention may be made of the interest manifested by the railroads in electro-mechanical interlocking, and work of this nature has been under consideration by the Mechanical Committee during the past year. The Chemicals Committee has been required to make many investigations of the kind of oil used on the railroads and its recommendations have been of material benefit in obtaining a standard grade of oil.

The Committee on Instructions has been busy during the past year preparing instructions for the use of various kinds of materials and for the maintenance and operation of storage batteries of the different types.

In addition to the work done by the committees of the section, the section itself has co-operated with other sections of the American Railway Association and outside engineering societies in studies which are being considered jointly by these different sections and societies. Through such co-operation it is expected that uniform conclusions will be reached by the different bodies.

Five New Chairmen Head A. R. E. A. Committees

FIVE NEW CHAIRMEN will present committee reports before the convention of the American Railway Engineering Association this week. These men are: C. R. Knowles, of the Committee on Water Service; S. D. Cooper, of the Committee on Wood Preservation; F. B. Wiegand, of the Committee on Signals and Interlocking; Prof. E. E. King, of the Committee on Economics of Railway Location and R. H. Ford of the new committee on Co-operative Relations with Universities. All of these men have records of long standing, either in the affairs of the association or in the particular line of activity represented by the work of their respective committees.

C. R. Knowles is one of the best known authorities on railway water service in America. Not only has he had an important part in the work of the Water Service committee during the past eight years, but he has been equally active in the American Water Works Association and the American Railway Bridge and Building Association, having served as president of the last named organization in 1923. Mr. Knowles' entire railway experience has been acquired in the employment of one railroad, the Illinois Central. He began his service with that road in 1900 as a water service repairman and was subsequently advanced to foreman and in 1916 to general foreman. Later he was given greater authority with the title of superintendent of water service, the position he occupies at the present time. Mr. Knowles served as vice-chairman of the Committee on Water Service for three years before his advancement to chairman.

S. D. Cooper, chairman of the Committee on Wood Preservation, has been a member of that committee for the past four years, having served two years as vice-chairman before being advanced to the head of the committee. He is also an active member of the American Wood Preservers' Association, with which he has been affiliated since 1915. In 1922 he served as secretary of that organization and for the past two years has occupied the office of vice-president. Mr. Cooper has had a long experience in wood preservation on the Santa Fe, where he now occupies the position of assistant manager of treating plants, with headquarters at Topeka, Kan.

F. B. Wiegand, chairman of the Committee on Signals and Interlocking, has occupied the position of signal engineer of the New York Central, Lines West, with headquarters at Cleveland, Ohio, for the past 12 years and since March, 1922, has served also as consulting engineer for the Cleveland Union Terminal. He has been actively engaged in railway signal work for the past 34 years, having entered the service of the New York Central & Hudson River in 1891, and has since been employed continuously on the New York Central Lines. Mr. Wiegand is a relatively new member of the association and his chairmanship of the Committee on Signals and Interlocking represents his first year with that committee. However, he has long been an active member of the Signal section of the American Railway Association and its predecessor, the Railway Signal Association. He served as chairman of the Signal section in 1922, after previous service as committee chairman, director and vice-chairman.

Prof. E. E. King, chairman of the Committee on Economics of Railway Location, is completing his first year on that committee, although he has long been an active member of the association. He is also a member of the Signal section of the American Railway Association, the Roadmasters and Maintenance of Way Association and a number of other engineering and scientific bodies. Since 1918 he has been professor of Railway Civil Engineering at the University of Illinois, having previously served in a similar capacity since 1907 at Oklahoma Agricultural and Mechanical College, Cornell University and Iowa State College. Previous to his educational service he saw an intensive and highly varied railway engineering experience on a number of different railroads following his graduation from Rose Polytechnic Institute in 1901. Professor King is the author of Railway Signaling.

R. H. Ford, chairman of the new Committee on Co-operative Relations with Universities, has been an active member of the Association for a number of years, having served on the Committee on Electricity from 1916 to 1922 and on the Committee on Economics of Railway Labor from the time of its organization in 1917 to the present time. He has also taken an unusually active part in the discussion on the floor of the convention. Mr. Ford is assistant chief engineer of the Chicago, Rock Island & Pacific, a position to which he was advanced following previous service as engineer of track elevation, valuation engineer and principal assistant engineer. His railway experience dates back to 1892 when he entered the service of the Rutland Railroad. Subsequently he entered the service of the Missouri Pacific as an assistant engineer, being advanced later to maintenance of way inspector, principal assistant engineer and assistant to the chief engineer. Following a brief service of chief engineer of a construction company in 1911 and 1912, he entered the service of the Rock Island to take charge of heavy track elevation construction at Chicago, involving problems of more than usual difficulty.

Annual Exhibit of the N. R. A. A. at the Coliseum

Products of 166 Exhibitors in Setting of Gray and Green Greet Convention Visitors

THE SIXTEENTH ANNUAL EXHIBITION of the National Railway Appliances Association opened formally at 8 o'clock yesterday morning when the doors of the Coliseum and annex swung aside for the first convention visitors. The entire floor area of the two buildings is taken up by the attractively arranged products of the 166 exhibiting members at this year's show. The success of the efforts of C. W. Kelly, secretary of the National Railway Appliances Association, and his assistants, was evidenced by the interior of the Coliseum as it awaited its first arrivals.

The decorating scheme this year is different from that of 1923 but is eqully attractive and tasteful. Green and gray are the predominating colors, set off here and there by splashes of white and gold. The ceiling is entirely concealed by streamers of bunting which sweep from the girders to the roof. The balcony rail has been transformed into a fence of electric lights, which adds immeasurably to the brilliance of the display. White enameled panels trimmed in green separate the booths this year as last year. The white columns are square-topped and emblazoned on the four sides is the crest of the association. Semipartitions extending from the high center panels a short distance out upon the lower partitions add to the individuality of the various exhibitors' spaces. The firm names, as usual, are in green on a white background.

L. W. Shugg

President

Mr. Shugg's election to the presidency of the National Railway Appliances Association last March followed five years of official service with this organization, one year as a vice-president and four years as a director. He has long been in the railway appliances field, having been connected with the General Electric Company at Schenectady, N. Y., for the past 22 years, during the first 14 years of which he was employed in the engineering and commercial departments. During the last eight years, Mr. Shugg has been actively engaged as a specialist in the advertising department of the company on convention and exhibition matters.

A four days' attendance which will break all previous records is confidently expected by officers of the association. The fact that the conventions of the Railway Signal Association and the American Railway Engineering Association occur during the same week as the exhibition lends weight to this hope. More signal convention delegates than heretofore will probably visit the Coliseum since their sessions do not take place until late in the week. The optimistic sentiment among the railroads and the greatly stimulated activity in the supply trade field will doubtless add to the number of visitors. Over 10,000 passes have been issued and 75,000 invitations have been sent to railway officers, members of the Interstate Commerce Commission and similar bodies and the technical schools. A large number of requests for tickets have been received from railway officers to be used both by themselves and their subordinate employees. An attendance of at least 25,000 is anticipated during the four days which the exhibits will be on display.

Convention delegates who have viewed the exhibition in other years will find that the same care has been taken to insure their comfort. Entrance to the exhibit is, as usual, through the Wabash avenue entrance of the annex. A free check room is located at the right of the entrance and a registration desk for members of the American Railway Bridge and Building Association, Roadmasters' and Maintenance of Way Association, American Railroad Signal Supervisor's Association, National Scale Men's Association and the National Railway Appliances Association is situated directly in front of the entrance. A large staff of clerks will be on hand at this desk at all times to assist in the registration of the members. A restaurant is located in the basement of the Coliseum where visitors may secure food without the trouble of leaving the building. Entrance to the basement is by way of a stairway opposite the main exit in the center of the Coliseum. Public telephones are provided at the south end of the Wabash avenue side of the same building. The exhibit will be open each day from 8 a. m. to 6:30 p. m. except today, when the doors will remain open until 10 p. m. The exhibition will close at 1 p. m. on Thursday.

The officers and members of the board of directors of the National Railway Appliances Association who

served during the past year are: President, L. W. Shugg, General Electric Company, Schenectady, N. Y.; vice-president, A. J. Filkins, Paul Dickinson, Inc., Chicago; secretary-treasurer, C. W. Kelly, Kelly-Derby Company, Inc., Chicago; honorary director, T. W. Aishton, the National Malleable and Steel Castings Company, Chicago; directors, W. J. Gillingham, Hall Switch and Signal Company, Garwood, N. J.; G. E. Geer, Wyoming Shovel Works, Minneapolis, Minn.; W. B. Murray, Miller Train Control Corporation, Danville, Ill.; H. S. Mann, Metal & Thermit Corporation, Chicago; L. E. Weidman, Frog Switch & Manufacturing Company, Carlisle, Pa., and A. L. Greenabaum, O. F. Jordan Company, East Chicago, Ind.

List of Exhibitors

The following is a list of the firms which are presenting exhibits, with the devices on display and the names of the representatives who are present at their booths. The devices exhibited for the first time are shown in bold faced type:

Adams & Westlake Company, The, Chicago.—Signal lamps; lanterns; crossing signals; switch locks; electric hand lanterns; wicks; **flashing relay for crossing signals; engine classification, marker and tender lamps; electric semaphore lamps with self-contained focusing device.** Represented by A. S. Anderson, Wm. J. Piersen, Harry G. Turney, E. H. Leisch, W. G. Porter and G. L. Walters. Spaces 87, 88, 106 and 107.

Adams Motor & Manufacturing Company, Chicago.—Railway motor cars. Represented by W. E. Adams, R. S. Adams and W. A. Bailey. Spaces 218 and 218½.

Ahlberg Bearing Company, Chicago.—**Bearings.** Represented by W. C. Bender, D. A. Campbell, B. B. Clark, H. E. Dunning, Walter Fries, C. W. Pearsall and K. R. Morrison. Space 169.

Air Reduction Sales Company, New York City.—Oxygen; acetylene; oxyacetylene hand welding and cutting apparatus; machines for track fabrication work. Represented by C. A. Daley, B. N. Law, R. T. Peabody, G. E. Phelps, E. M. Sexton, C. Williams and G. Van Alstyne. Spaces 167 and 168.

American Abrasive Metals Company, New York City.—Step treads for coaches and station steps; thresholds; floor plates; tile. Represented by R. P. Spooner and C. A. Barker. Space 153.

American Bolt Corporation, Boss Nut Division, Chicago.—Lock nuts. Represented by J. A. MacLean, J. W. Fogg and Cliff Beaumont. Space 370 and 371.

American Car and Foundry Company, Chicago.—Electric metal heaters; **stock heater.** Represented by A. G. Wood. Space 125.

American Chain Company, Inc., Bridgeport, Conn.—Chain; guard rail; rail clamp; car replacer; rail bender. Represented by G. C. Isbester, A. H. Weston, A. W. Taggart, A. P. Van Schaick, H. M. Bridgewater, J. N. Lee, Ben Coaley, J. P. Ferguson, E. J. Flood, W. A. Berner and W. C. Wolfe. Spaces 81, 82 and 83.

American Hoist & Derrick Company, St. Paul, Minn.—Railroad ditcher. Represented by H. M. Hoeller, W. B. Maurer and W. L. Manson. Space 88½.

American Malleable Castings Association, Cleveland, Ohio.—Malleable iron castings. Represented by Robt. E. Belt, Enrique Touceda, Joseph Deisher, G. S. Staunton, Earl V. Stoody, Sherwood I. Berger and D. Porter Spencer. Spaces 181, 182 and 183.

American Steel & Wire Company, Chicago.—Rail bonds; arc welding machines; rail bonding machines; copper wire; electrical wires and cables; wire rope; signal wire; rubber-covered wire; right-of-way fence; steel fence posts. Represented by B. H. Ryder, C. S. Knight, C. F. Wiley, J. H. Alexander, H. H. Febrey, J. May, J. W. Meaker and L. P. Shanahan. Spaces 33 and 34.

American Valve & Meter Company, The, Cincinnati, Ohio.—Water columns; switch stands; telescopic spouts; interlocking switch stands; switch locks; automatic float valves; **automatic water column.** Represented by J. T. McGarry, D. J. Higgins and F. C. Anderson. Spaces 130, 131 and 132.

Anchor Company, The, Milwaukee, Wis.—**Rail anchors.** Represented by G. H. Chadwell, W. C. McMahon and E. Fitzgerald. Space 164½.

Argyle Railway Supply Company, Chicago.—Rerailers; derails; steel fence posts; waterproofing compound; cinder pit type rail clamps; **station stoves.** Represented by A. H. Green and W. P. Whitfield. Space 163.

Armco Culvert & Flume Manufacturers' Association and American Rolling Mill Company, The, Middletown, Ohio.—Culverts. Represented by T. P. Kahoe, L. M. Sandston, D. M. Strickland. Spaces 99 and 100.

Baker R. & L. Company, The, Cleveland, Ohio.—Electric trucks and tractors; elevating truck; three-wheel tractor; locomotive crane truck. Represented by T. W. Barnes, W. F. Hebard, F. N. Phelps and H. B. Greig. Spaces 205 and 210.

Balkwill Manganese Crossing Company, Cleveland, Ohio.—Manganese crossings. Represented by Stephen Balkwill. Spaces 201 and 214.

Bethlehem Steel Company, Bethlehem, Pa.—Switch stands; guard rails; gauge rods; switches; rails; **all-steel guard rail; lock nuts.** Represented by N. E. Falsich, G. S. Vickering, E. G. Stoll, H. Weymouth, M. Carroll, C. H. Riddle, J. V. Honeycut, R. Knibloe, C. A. Alden, J. H. Budd, J. F. Clark, E. E. Goodwillie, J. F. Hennessey, E. F. Illig, W. Chapman, H. M. Stark, R. Boyfen, J. C. Chandler, H. B. Kreulen and G. A. Richardson. Spaces 52½, 53, 71½ and 72.

Blake Manufacturing Company, Mansfield, Pa.—**Portable flood light; soldering irons.** Represented by Thos. D. Crowley, E. L. Ruby and Ralph W. Payne. Space 224.

Blaw-Knox Company, Blawnox, Pa.—Clamshell buckets; working models. Represented by C. H. Lehman, J. H. Flynn, Gustave Schirmer, Wm. H. Schutte, R. A. Wholley, W. P. Bixby and A. M. Rose. Space 89.

Bowser, S. F., & Company, Inc., Fort Wayne, Ind.—Right-of-way oil pump; cross section of tank showing construction; photos of railroad installations. Represented by E. M. Harshbarger. Space 9.

Brach, L. S., Manufacturing Company, Newark, N. J.—Lightning arresters. Represented by S. C. Bryant. Space 2.

Brown Rail Loader Company, Boston, Mass.—Rail loading machine; switches; frogs. Represented by James C. Barr. Spaces 229 and 230.

Bryant Zinc Company, Chicago.—Highway crossing protection devices; rectifiers; electrical testing instruments; railway signal accessories; **magnetic autoflag; rectifier and crossing light signal.** Represented by D. R. Day, J. F. Gubbins, J. Hensel, T. H. Cole, S. Miskelly, Frank Lull, A. F. Klink and W. G. Brand. Spaces 154 and 155.

Buda Company, The, Harvey, Ill.—**Motor cars; power** plants; switch stands; jacks; wheels; tool grinders; track and bonding drills; track guages and levels; headlight; pump. Represented by L. M. Viles, F. E. Place, H. M. Sloan, R. B. Fisher, J. L. Artmaier, H. P. Bayley, H. C. Beebe, A. L. Bliss, J. J. Gard, E. W. Hoover, W. P. Hunt, H. L. Miller, J. E. Murray, A. H. Deimel, J. H. Weare, L. J. Ross and C. W. Wood. Spaces 61, 62, 63, 64 and 65.

Butler Manufacturing Company, Kansas City, Mo.— **Storage tanks; portable steel buildings.** Represented by Don J. Butler and E. B. Young. Space 189.

Carbic Manufacturing Company, Duluth, Minn.—Acetylene lights and equipment; welding and cutting torches; generator. Represented by W. T. Funston, D. C. Duncan, C. J. Nyquist and Gordon Paterson. Spaces 165, 166 and 166½.

Carnegie Steel Company, Pittsburgh, Pa.—Rail joints; rails. Represented by C. R. Moffatt, P. W. O'Brien, O. T. Buffington, R. Torsen, C. B. Friday, O. H. Beeker, L. G. Hagen, E. P. Selby, E. T. Sutliffe, G. A. Price, F. Ohl and J. A. McCree. Spaces 51½ and 52.

Carter Bloxonend Flooring Company, Kansas City, Mo.—Flooring for freight houses, shops, stations; **sections bored and with the nails positioned for lateral nailing.** Represented by C. J. Carter, M. G. Truman, A. E. Giese, L. L. Bucklew and J. G. Galvin. Space 219.

Central Electric Company, Chicago.—Electrical supplies. Represented by A. L. McNiel, R. N. Baker, L. R. Mann, E. H. McNiel, J. N. Lorenz, J. W. Hackett, F. J. White and H. A. Hamilton. Space 17.

Challenge Company, The, Batavia, Ill.—Working model of tank. Represented by F. C. Snow, E. W. Johnson, M. J. Marcuson, R. L. Lewis, H. E. Hansen, J. Carlson, F. F. Tiffenbach and W. J. Dickenson. Space 109.

Channon Company, H., Chicago.—Signal lamps; track shovels; wrenches; **electric hammer drill; electric switch lamp.** Represented by H. S. La Barge, Arthur G. Johnson, Judson S. Pixley, Wm. H. Baldwin and N. P. Linde. Space 144.

Chicago Bridge & Iron Works, Chicago.—Conical bottom tank; **ground-operated water softening plant.** Represented by Merle J. Trees, H. C. Brown, L. McDonald, C. H. Scheman, K. I. Small, H. B. Murphey, F. L. Cook, R. M. Campbell, J. R. Donaldson, E. P. Shelton and C. M. Ladd. Spaces 50½ and 51.

Chicago Malleable Castings Company, Chicago.—Rail anchor tie plate; bumping posts. Represented by W. M. Osborn, W. L. Beaudway, J. R. A. Anderson and J. S. Llewellyn. Space 142.

G. E. Geer, Director

T. W. Aishton, Honorary Director

W. B. Murray, Director

A. J. Filkins, Vice-President

C. W. Kelly, Secretary-Treasurer

W. J. Gillingham, Director

A. L. Greenabaum, Director

L. E. Weidman, Director

Officers of the National Railway Appliances Association

Chicago Pneumatic Tool Company, New York City.—Portable air compressors; electric and air tools; **air drill.** Represented by A. C. Andresen, Ed. W. Aplin, G. C. Vanden Boom and H. G. Barbee. Spaces 118, 119, 137 and 138.

Chicago Railway Signal & Supply Company, Chicago.—**Color light signals.** Represented by Carl Suhr, A. C. Dunne, J. T. Stevenson, W. M. McClintock, E. W. Vogel and D. J. McCarthy. Space 7.

Chipman Chemical Engineering Company, Inc., New York City.—Oil painting and stereopticon showing effect of weed killer. Represented by T. B. Bowman and B. G. Thompson. Space 45.

Cities Service Oil Company, Chicago.—Refrigerator car seal; bridge paints; waterproofing asphalts; asphalts and oils for all railroad purposes. Represented by B. C. Phillippo, G. H. Scribner, C. A. Macfarlane and E. D. Pochel. Space 4.

Clark Car Company, Pittsburgh, Pa.—Photographs and literature of extension side dump cars. Represented by H. E. Chilcoat, B. K. Mould and W. R. Kennedy. Space 115.

Cleveland Frog & Crossing Company, Cleveland, Ohio.—Represented by G. C. Lucas, Geo. Stanton, L. G. Parker, Geo. A. Peabody and J. A. Donahey. Space 90½.

Cleveland Railway Supply Company, The, Cleveland, Ohio.—Flangeway guards; switch stand; foot guards; rail braces and tie plates; guard rail; track aligner; rail clamp. Represented by F. A. Peck, E. E. Schrock, D. L. Millikin and W. H. Neeson. Space 133.

Copperweld Steel Company, Rankin, Pa.—Wire; ground rods; nails; bond wires; track circuit connections; stranded bonds; **wire plug bonds; wire-stranded plug bonds.** Represented by W. Marshall Page, W. S. Krenz and E. Elg. Space 160½.

Creepcheck Company, Inc., Hoboken, N. J.—Rail anchors. Represented by T. D. Crowley, T. J. Farrell and Frank Reagan. Space 157½.

Crerar, Adams & Company, Chicago.—Track tools; drills; jacks. Represented by R. Wallace, W. I. Klock, J. A. Martin, G. B. Bassett and E. C. Poehler. Space 28.

Detroit Graphite Company, Detroit, Mich.—Paints and allied products. Represented by P. L. Maury, T. R. Wyles, W. D. Waugh, J. R. C. Hintz, O. N. Edgar, A. B. Edge, Jefferson Davis, L. F. Flanagan and E. Booth. Spaces 58 and 59.

Diamond State Fibre Company, Bridgeport, Pa.—Fibre insulation for track joints. Represented by G. Swallow, Franklin Dunlap, C. L. Simmons, J. B. Rittenhouse, George Brickley, A. L. Sullivan, J. H. Mueller and H. B. Donnelly. Space 116.

Dickinson, Paul, Incorporated, Chicago.—Smoke jacks; roof ventilators; smoke plates. Represented by A. J. Filkins, C. W. Hansen and H. Knutson. Space 98.

Dilworth, Porter & Company, Inc., Pittsburgh, Pa.—Railroad spikes and tie plates. Represented by W. F. Schleiter and Joseph Dilworth. Space 27.

Duff Manufacturing Company, The, Pittsburgh, Pa.—Lifting jacks. Represented by C. N. Thulin, E. E. Thulin, E. A. Johnson, G. W. Watts, C. A. Methfessel, W. G. Robb, T. A. McGinley and E. M. Webb. Space 89½.

Edison, Thos. A., Inc., Bloomfield, N. J.—Batteries. Represented by L. W. McChesney, R. E. Trout, P. A. Garney, E. W. Brown, E. W. Newcombe, E. F. Hines, A. L. Laughren, L. S. Dunham, F. S. Stallknecht, R. J. Frost, O. K. Rose and J. S. Knox. **Spaces 18 and 19.**

Electric Storage Battery Company, The, Philadelphia, Pa.—Signal cells; interlocking plant cells; **signal cells chloride accumulator.** Represented by W. H. Payne, H. B. Hamilton, H. C. S. Polk, H. S. Mills, H. W. Beedle, L. E. Lighton, J. D. Fischer, F. C. A. Houston, G. V. Cripps, J. D. Sinnott, L. F. Boerner, E. Kower, H. M. Beck, T. Milton, W. R. Knappenberger and H. B. Crantford. Space 40.

Electric Tamper & Equipment Company, Chicago.—Electric tie tamper; **steel wheel for motor cars.** Represented by C. Jackson, Wayne Adams, Ray Cartier, Vincent Cartier and H. W. Cutshall. Spaces 149 and 149½.

Elwell-Parker Electric Company, New York City.—Crane truck; elevating platform truck; **tractor; erecting crane.** Represented by L. C. Brown, G. W. Brown, J. M. Brown, L. Miller and T. E. Dickenson. Spaces 200 and 215.

Fairbanks, Morse & Company, Chicago.—Motor cars; electric motors; oil engines; steam and centrifugal pumps; water standpipes; water cranes; scale beam. Represented by P. H. Gilleland, G. W. Lewis, F. M. Condit, E. C. Golladay, B. S. Spaulding, C. H. Wilson, D. K. Lee, F. J. Lee, H. W. Finnell, G. Howard, E. P. Chase, E. J. Coverdale, R. F. Lane, J. L. Jones, E. E. Pendray, H. E. Vogel, H. L. Hilleary, C. B. O'Neil, A. J. Olson, F. P. Drinker, J. T. Frame, F. C. Snyder, F. V. Roy, M. O. Southworth, L. R. Boyer, C. G. Mahana, Wm. Dehn, J. C. Flanagan, W. F. Anderson, S. G. Eaton, F. N. Whitesell, H. M. Beebe, W. S. Hovey, F. A. Moseley and J. E. Bachelder. Spaces 73, 75, 92 and 95.

Fairmont Railway Motors, Inc., Fairmont, Minn.—Inspection car; **section cars; section motor car with transmission;** ball bearing engine. Represented by H. E. Wade, W. F. Kasper, W. D. Brooks, H. M. Starret, W. G. Day, Chris Dammann, C. W. Brhel, J. McMahon, J. P. Dunning and M. A. Evans. Spaces 41, 42 and 43.

Fleming, J. R., & Son Company, Scranton, Pa.—**Switch point protector.** Represented by A. J. Fleming. Space 172.

Frog, Switch & Manufacturing Company, The, Carlisle, Pa.—Steel frog; **flange frog.** Represented by L. E. Weidman and A. Gordon Jones. Spaces 47 and 48.

General Electric Company, Schenectady, N. Y.—Signal accessories. Represented by J. Roberts, C. C. Bailey, C. Dorticos, L. W. Shugg, C. T. McLoughlin, W. J. Hedley, H. M. Jacobs and W. G. Ferguson. Spaces 35, 36 and 37.

General Railway Signal Company, Rochester, N. Y.—Color light signals; switch machine; interlocker; electric lock for mechanical interlocking; unit lever for electric interlocking; relay; transformer; track reactor; terminals, arresters, fuses, track resistances; **lightning arrester.** Represented by F. W. Moffett, W. K. Howe, S. N. Wight, H. P. Ober, J. R. Wills, J. C. Lindner, C. W. Prescott, W. J. Plogsted, W. K. Reichard, C. M. Deardorff, S. M. Day, Paul Renshaw, P. E. Carter, L. Thomas, J. A. Geneser, W. H. Workman, H. W. Lucia, C. Henze, R. Gould, H. C. Ware and A. G. Moore. Spaces 49 and 50.

Graver Corporation, East Chicago, Ind.—Photos of water softeners; **household zeolite; principal parts of water softener in operation.** Represented by John J. Felsecker. Spaces 96 and 97.

Gurley, W. & L. E., Troy, N. Y.—Transits; levels; rods; flagstaffs; plane table outfits; **transits.** Represented by C. H. Smart and R. D. Leaf. Space 60.

Hall Switch and Signal Company, Garwood, N. J.—Light signals; highway crossing signals; electric motor signals; relays; switch controllers; **light signals.** Represented by H. W. Wolff, W. J. Gillingham, J. J. O'Meara, E. S. Berry, O. S. Field, C. G. Harwig, F. P. Stoker, P. Sosinski and W. L. Houck. Spaces 85 and 86.

Hayes Track Appliance Company, Richmond, Ind.—Derails. Represented by R. H. Gausepohl, H. Q. Hamilton, S. W. Hayes, H. H. Jenkins, H. J. Mayer, W. C. Pistler, S. P. Reid and F. C. Stowell. Spaces 140 and 141.

Hazard Manufacturing Company, Chicago.—Signal wire; insulated wires; cables. Represented by W. S. Hart, H. B. Pflasterer, T. A. Keefe and L. W. Allen. Spaces 21 and 22.

Headley Good Roads Company, Philadelphia, Pa.—Railroad crossing. Represented by Francis X. Kern and W. T. Gilbert. Spaces 158 and 158½.

Hoffman, Andrew, Manufacturing Company, Chicago.—Folding windows for interlocking towers. Represented by Ralph E. Peck. Space 169½.

Howlett Construction Company, Moline, Ill.—Electric automatic hoist. Represented by W. E. Howlett. Space 186.

Hubbard & Company, Pittsburgh, Pa.—Shovels; tools. Represented by W. H. Remmel, J. V. Smith, H. M. Pforsich and M. Lasher. Space 143.

Idol Track Liner Company, Chicago.—Track liners. Represented by T. D. Crowley. Space 225.

Illinois Malleable Iron Company, Chicago.—**Anchor and tie plates;** iron body gate valves. Represented by J. R. Calderon and H. T. Rieck. Space 5.

Illinois Steel Company, Chicago.—Steel wheels; spikes; screw spikes; bolts and nuts; tie plates; rail joints; angle bars. Represented by C. R. Moffatt, P. W. O'Brien, D. T. Buffington, R. Korsan, Grant Monk, C. B. Friday, O. H. Baker, L. G. Hagen, A. P. Selby, E. G. Sutcliffe, G. A. Price, F. Ohl, J. A. McCree, B. T. Wherry, R. G. Glass and J. G. Sullivan. Spaces 70½ and 71.

Ingersoll-Rand Company, New York City.—Tie tamping outfits; track tools; rail drill; **portable compressor.** Represented by W. H. Armstrong, J. P. Gillies, J. N. Thorp, E. F. Kultchar, F. D. McDermott, E. R. Bailey and L. W. Schnitzer. Spaces 206 and 209.

International Signal Company, The, New York City.—Automatic train control; **attachments for speed control.** Represented by Jean F. Webb, Jr., and H. Tracy Rogers. Space 135.

Jaeger Machine Company, Columbus, Ohio.—Concrete mixer. Represented by C. W. Kelly. Space 31.

Johns-Manville, Inc., New York City.—Insulations; roofings; floorings. Represented by J. E. Meek, J. C. Younglove, G. A. Nicol, P. C. Jacobs, L. S. Wilbur, A. H. Purdom, T. R. Austin, H. J. Crowe, F. C. Vandervort, Jr., J. H. Trent, C. S. Clingman, C. M. Patten, B. J. Queen, F. J. Horn, H. B.

Sewell, H. Flannagan, C. D. Biggerstaff, W. J. Stewart, C. D. Folsom, H. G. Newman, W. R. Bush, W. J. Hennessy, R. C. Simmons, J. D. Johnson, P. E. Redding, B. J. Jordan and A. C. Towne. Spaces 174, 175, 176 and 177.

Jordan Company, O. F., East Chicago, Ind.—Spreader with ditching attachments; composite spreader-ditcher; ice cutting attachment. Represented by A. L. Greenabaum, J. F. Curtis, J. C. Forbes, A. W. Bantono, Alfred Jones, J. S. Zuckerman, Ray Cosgrove and Wm. C. Tuchek. Spaces 56 and 57.

Kalamazoo Railway Supply Company, Kalamazoo, Mich.—Motor inspection cars; motor section cars; combination gauge and level; **electric crossing gate; motor car.** Represented by John McKinnon, Frank E. McAllister, D. A. Stewart, R. E. Keller, P. Robischung and L. W. Bates. Spaces 8, 23, 24 and 25.

Kaustine Company, Inc., Reading, Pa.—Chemical toilets; septic tanks; **small chemical toilet.** Represented by E. J. Tate, C. F. Smale and David A. Evans. Spaces 163½ and 164.

Kelly-Derby Company, Inc., Chicago.—Wash fountains; chemical toilet; septic tanks; warehouse trucks. Represented by C. N. Leet, P. W. Pybus, B. J. Leet and F. J. Beran. Space 30.

Kentucky Rock Asphalt Company, Louisville, Ky.—Rock asphalt. Represented by W. A. Brownfield and W. F. Pollard. Space 157.

Kerite Insulated Wire & Cable Company, The, New York City.—Insulated wires and cables. Represented by B. L. Winchell, Jr., P. W. Miller, Azel Ames, J. W. Young, J. A. Renton, W. H. Fenley, J. A. Hamilton, E. L. Adams, C. A. Reeb and C. E. Hieber. Spaces 68 and 69.

Keystone Grinder & Manufacturing Company, Pittsburgh, Pa.—Tool grinders; **attachment for redressing rail cutters.** Represented by S. S. Newman and L. J. Cooney. Space 193.

Keystone Steel & Wire Company, Peoria, Ill.—Woven wire and barbed fence wire; **railroad fence.** Represented by J. P. Distler, C. A. Kellogg and J. W. Walker. Space 211.

Layne-Bowler Chicago Company, Chicago.—Pumping plant. Represented by C. R. Smith. Space 188.

Lehon Company, The, Chicago.—Roll roofing; asphalt shingles; waterproof building paper; waterproofing membranes; roof coatings and paints. Represented by Tom Lehon, E. A. Leonard, J. W. Shoop, John Eipper, R. M. Chissom, F. A. Locke and W. P. Engel. Space 91.

Lorain Steel Company, The, Johnstown, Pa.—Frogs; rails; switch stands; bolts; **crossing.** Represented by C. Burton, E. P. Entwistle, H. C. Stiff, C. R. Bossler, A. L. George, J. A. McHugh, J. Stanley, Wm. Lynan, W. W. Kingston, T. J. Moore, A. L. Verner, T. W. Brush, John Harlan, S. J. Cotsworth, H. O. Gleeson, Otto Fisher, S. P. McGough, H. H. McDonald and J. G. Vance. Spaces 202, 203, 212 and 213.

Lufkin Rule Company, The, Saginaw, Mich.—Tapes; rules; calipers; surveyors' chains and chaining pins. Represented by S. A. McConnell and R. M. Benjamin. Space 121.

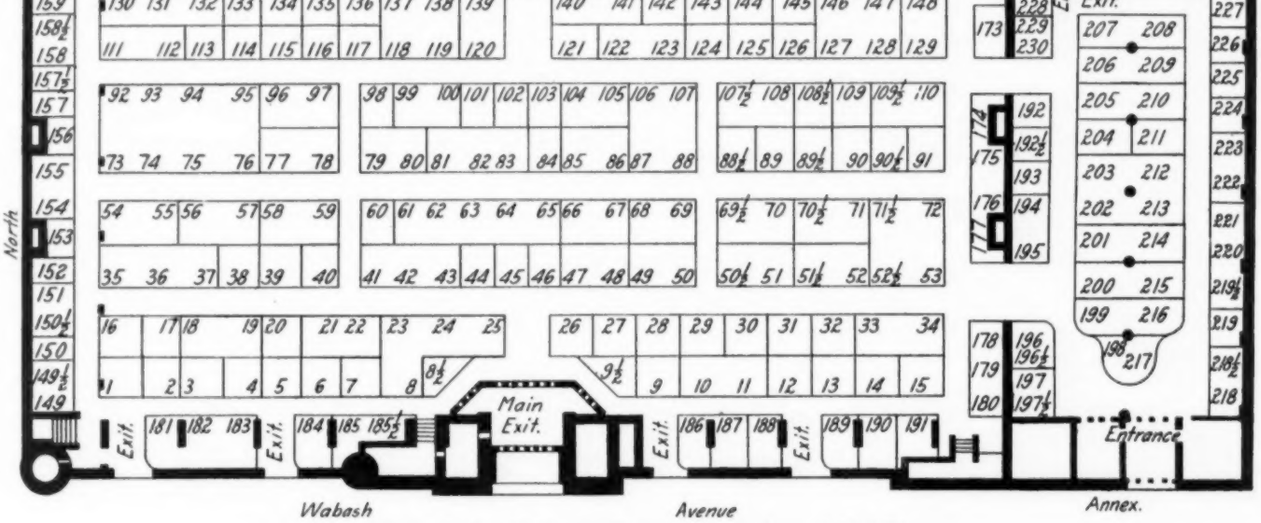
Lundie Engineering Corporation, The, New York City.—Tie plate; rail anchor. Represented by John Lundie, Eugene Brandeis, L. B. Armstrong, E. H. Batchelder, Jr., George W. Nibbe and W. Brooke Moore. Space 90.

Magnetic Signal Company, Los Angeles, Cal.—**Magnetic wig wag flagman, two and three position types, also with auxiliary signal indicating failure to operate;** relay and resistance box Represented by H. W. Renick, S. G. Johnson, J. V. Wescott and Laurence Boswell. Space 165½.

MacRae's Blue Book Company, Chicago.—MacRae's Blue Book. Represented by Albert MacRae, Thos. H. MacRae, J. Cordon, L. Simonson, C. Hill, G. R. Wilson, R. S. Jaquith and H. Deeming. Space 9½.

Maintenance Equipment Company, Chicago.—Friction car stop; power ballast screen; rail laying machine; derail; tie spacer; steel fence posts; switch point straightener; **jack.** Represented by H. C. Holloway, J. A. Roche, Emmons Overmier and A. L. Arnold. Spaces 194 and 195.

Massey Concrete Products Corporation, Chicago.—Concrete pipe; piling; cribbing; signal foundations; battery wells; movie exhibit of pile driving. Represented by J. S. Hobson, C. Gilman, F. V. Shannon, J. A. Higgs, C. H. Hunsaker, G. H. Redding, D. A. Hultgren, Paul Kircher, W. Lyle McDaniel, D. B. Hanna and E. C. Alexander. Spaces 54 and 55.



Floor Plan of the Coliseum Showing Location of Exhibits

McGraw-Hill Company, Inc., New York City.—Publications. Represented by M. B. Knox and Chas. Gordon. Space 8½.

Mechanical Manufacturing Company, The, Chicago.—Bumping posts. Represented by H. E. Johnson and J. W. Hubbard. Spaces 219½, 220 and 221.

Mercury Manufacturing Company, Chicago.—Tractor; industrial trailer. Represented by John R. Brusley, A. D. Shanks, W. I. Lott and L. J. Kline. Space 217.

Metal Safety Railway Tie Company, Philadelphia, Pa.—Models of metal ties. Represented by J. E. Longford, Jr., G. P. Garff, J. C. Tuddenham, E. C. Maulfair and M. R. Jacobs. Space 161½.

Metal & Thermit Corporation, New York City.—Samples of welds made in rail; materials and appliances for welding rails. Represented by W. R. Hulbert, H. S. Mann, C. D. Young, W. H. Moore and A. F. Beaulieu. Spaces 207 and 208.

Miller Train Control Corporation, Danville, Ill.—Train control equipment. Represented by W. B. Murray, E. E. Murray and H. B. Miller. Spaces 197 and 197½.

Modern Frog and Crossing Works, Chicago.—Frogs; adjustable rail braces; guard rail clamps; switch clips, open side sockets; switch rod adjustments; switch plates; **switch stand; switch point guard rail; manganese crossing corner.** Represented by B. T. Gibbs, W. H. Hartz, G. F. Killmer, H. Macke, J. F. Karcher and W. J. Wilmot-Gilbert. Spaces 69½ and 70.

Mudge & Company, Chicago.—Motor cars; engines. Represented by R. D. Sinclair, T. J. Eklund, A. C. Farce, J. M.

Mulholland, V. Pagett, F. C. Whitehouse and C. P. Benning. Spaces 127, 128, 146 and 147.

Murdock Manufacturing & Supply Company, The, Cincinnati, Ohio.—Water service boxes; drinking fountains and hydrants; **water service boxes with individual stop cocks.** Represented by Kelso Murdock and John C. Endebrock. Space 134.

M. W. Supply Company, Philadelphia, Pa.—Rail benders; tie plate guard rail fasteners; switch heaters. Represented by Philip H. Weber. Space 101.

National Boiler Washing Company of Illinois, Chicago.—Leadized pipe and samples of welding. Represented by Frederick A. Gale, Fred W. Gale, T. G. Dalton, David Anderson, C. R. Bruce and F. S. Wichman. Space 12.

National Carbon Company, Inc., Cleveland, Ohio.—Signal cells and renewals; dry cells, flashlights; carbon products; **storage cells, precharged and armored construction.** Represented by A. E. Pratt, D. H. Green, R. J. Cox, W. J. Emig, P. M. Etters, J. S. Gemmel, L. R. Griffin, P. G. Pendorf, M. D. Rees, L. M. Ritchie, W. A. Sisler and I. T. Kelly. Spaces 150½ and 151.

National Lead Company, New York City.—Old paint mill. Represented by A. H. Sabin, F. M. Hartley, W. S. Carlisle, C. B. Haas and F. E. Dodge, Space 114.

National Lock Washer Company, Newark, N. J.—Spring washers. Represented by C. H. Loutrel, J. Howard Horn, R. L. Cairncross, Ralph D. Payne and William H. Reaves. Space 192.

National Malleable and Steel Castings Company, Cleveland, Ohio.—Small models of draft gears; couplers; journal boxes; extended floor pockets; samples of washers of various designs; rail anchors; rail braces; tie plates; wrecking hook. Represented by T. W. Aishton, L. S. Wright, G. R. Rasmussen, F. E. Moffet and G. A. Faitz. Space 102.

National Safety Appliance Company, The, Chicago.—Train control apparatus. Represented by W. T. Tyler, C. C. Anthony, S. A. Bostwick, J. P. Robinson, H. P. Folker and E. W. Stone. Space 150.

National Vulcanite Fibre Company, Wilmington, Del.—Fibre for insulation; **specialties.** Represented by J. Warren Marshall, F. P. Southworth, C. C. Bell, H. C. Hackett, E. W. Patterson, C. M. Sheward, Jr., and John Barron. Space 126.

Nelson, B. F., Mfg. Company, Minneapolis, Minn.—Roofing; asphalt shingles; insulating paper; **insulating paper for refrigerator cars.** Represented by D. B. Wright and H. A. Jackson. Space 172.

Nichols, G. P., & Bros., Chicago.—Electric turntable tractor. Represented by S. F. Nichols, N. Fries and G. M. Shearer. Space 173.

Northwestern Motor Company, Eau Claire, Wis.—**Heavy duty car equipment with Ford motor;** standard section motor car; ball bearing motor car engine. Represented by F. W. Anderson, R. R. Rosholt, A. H. Nelson and Harvey W. Cutshall. Spaces 196 and 196½.

Ogle Construction Company, Chicago.—Photographs of coaling stations. Represented by C. T. Bledsoe, M. W. Powell, J. G. Forester and L. S. Murphy. Space 29.

Ohio Brass Company, The, Mansfield, Ohio.—Signal bonds; line insulators; third rail insulators; electrification supplies; **signal strain and dead end device.** Represented by M. R. Gowing, O. M. Hullinger, W. P. Bovard, M. McCormick, Jas. H. Drew, L. W. Burch, Frank E. Johnson, Robt. J. Deneen and J. M. Strickler. Space 3.

Okonite Company, The, Passaic, N. J.—Samples of rubber and varnished cambric; insulated wire and cables; tapes. Represented by J. D. Underhill, F. J. White, H. A. Hamilton, J. L. Phillips, W. R. Van Steenburgh and J. W. Hackett. Space 16.

Oxweld Railroad Service Company, Chicago.—Welding equipment. Represented by L. C. Ryan, W. F. Kopmehl, Frank Lurquin and F. C. Theischen. Spaces 10 and 11.

P. & M. Company, The, Chicago.—Rail anti-creepers; bond wire protectors. Represented by P. H. Hamilton, Thos. J. Byrne, W. A. Maxwell, D. T. Hallberg, F. N. Gray, J. E. Mahoney, M. K. Ruppert, W. S. Walker and W. H. Reeves. Spaces 122 and 123.

Page Steel & Wire Company, Bridgeport, Conn.—Signal bond wires; gas welding rods and electrodes; strand and line wire; panel partitions; right-of-way fence; **welding rods and electrodes.** Represented by W. T. Kyle, C. A. McCune, E. J. Flood and W. A. Berner. Space 84.

Patterson, W. W., Company, Pittsburgh, Pa.—Tackle blocks; steamboat ratchets. Represented by W. W. Patterson, Jr. Space 145.

Pittsburgh-Des Moines Steel Company, Pittsburgh, Pa.—Elevated steel tanks; water treating plants; coal tipples. Represented by Ivan Bickelhaupt and Robt. Baily. Space 152.

Pocket List of Railroad Officials, The, New York City.—Pocket List of Railroad Officials. Represented by J. Alexander Brown, Harold A. Brown and Leo Ehlbert. Space 26.

Portland Cement Association, Chicago.—Photos and literature on railway uses of concrete. Represented by D. A. Tomlinson, L. M. Arms and R. R. Litehiser. Space 117.

Positive Rail Anchor Company, Marion, Ind.—Girder guard rails; forged guard rail braces and plates; rail braces; tie plates. Represented by A. H. Told, L. C. Ferguson and E. A. LeBeau. Spaces 178, 179 and 180.

Pyle-National Company, The, Chicago.—Floodlights; train control turbo-generators; headlight turbo-generators; headlight or train control turbo-generator in section; **headlight and train control turbo-generator.** Represented by J. Will Johnson, Wm. Miller, Thos. P. McGinnis, Roger Lucy and Geo. E. Haas. Space 190.

Q. and C. Company, The, New York City.—Joints; guard rails; guard rail clamps; derails; snow melters; switch stands; adjustable rail braces; car replacers; insulated joints; **derail.** Represented by F. F. Kister, E. M. Smith, L. T. Burwell, E. R. Packer, R. J. McComb, Lewis Thomas and J. L. Terry. Spaces 120 and 139.

Rail Joint Company, The, New York City.—Rail joints; track liner. Represented by V. C. Armstrong, J. C. Barr, B. G. Braine, Alexander Chapman, E. A. Condit, Jr., C. A. Disbrow, Wm. C. Gadd, J. A. Greer, C. B. Griffin, H. C. Hickey, Chas. Jenkinson, G. H. Larson, Milton Markley, J. N. Meade, J. G. Miller, E. Muehleck, R. W. Payne, F. C. Runyon, Thomas Ryan, E. F. Schermerhorn, R. R. Seward, McLeod Thomson, W. P. Thomson, F. C. Webb, G. T. Willard, Benj. Wolhaupter and D. P. Wolhaupter. Spaces 79 and 80.

Railroad Accessories Corporation, New York City.—Bonds; chains; pins; power rail drilling machine; enameled steel signal; dwarf blades; rail connections; lightning arresters; **testing terminals; adjustable lamp base and transformer; number plates.** Represented by F. C. Lavarack, E. M. Deems and Henry Lavarack. Space 13.

Railroad Supply Company, The, Chicago.—Tie plates; derailers; crossing bells wig wag signals; light signals; relays; flashing lights; lightning arresters; channel pins; annunciators; signal accessories and supplies. Represented by E. H. Bell, H. M. Buck, Paul W. Kohnen, A. H. Smith, H. G. Van Nostrand, W. S. Boyce, M. J. Fox, F. M. Hill, R. D. Hawley and R. E. Bell. Spaces 104 and 105.

Railway Purchases and Stores, Chicago.—Magazines. Represented by Edward Wray and H. B. Kirkland. Space 159.

Railway Review, Chicago.—Publications. Represented by H. A. Smith, R. R. Greig, C. H. Gertner, D. S. Stillman, C. L. Bates and J. E. Gougeon. Space 44.

Ramapo Ajax Corporation, Hillburn, New York.—Automatic safety switch stands; guard rail; switch point; switch slide plate; rail braces; guard rail clamp; tubular crossing. Represented by T. E. Akers, W. Bender, J. V. Cowling, Darcy F. Hilton, P. Hoffman, J. V. Houston, W. C. Kidd, R. W. Payne, W. A. Peddle and J. B. Strong. Spaces 109½ and 110.

Rawls Machine & Manufacturing Company, Chicago.—Track mowers. Represented by S. E. Rawls, J. Kranz and E. Paulson. Spaces 161, 162 and 162½.

Reade Manufacturing Company, Jersey City, N. J.—Weed exterminator. Represented by C. H. Reade and R. W. Pritchard. Space 187.

Reliance Manufacturing Company, The, Massillon, Ohio.—Nut locks. Represented by H. J. McGinn. Space 108½.

Richards-Wilcox Manufacturing Company, Aurora, Ill.—Fire wall; fire doors; corrugated sheet metal; round house door equipment; door hardware for heavy doors; hangers and track for straight sliding doors. Represented by E. J. G. Phillips, Albert Thurow, A. J. LaFleur, A. J. Eggleston and J. H. Wise. Spaces 170, 170½ and 171.

Roberts Company, The Geo. J., Dayton, Ohio.—Miniature water treating plant; **water engines.** Represented by John C. Jamieson and Harry Ostendorf. Space 136.

Roberts and Schaefer Company, Chicago.—Photographs of locomotive coaling plants; sand drying plants and cinder handling plants; electrically operated model in operation of cinder plant. Represented by Clyde P. Ross, David E. White, Chas. Corwin, H. S. Shimizu and C. L. McCoy. Space 14.

Robertson, Wm., & Company, Chicago.—Culverts; cinder conveyor. Represented by W. Robertson and W. K. Robertson. Space 184.

Sellers Manufacturing Company, Chicago.—Tie plates; **guard rail tie plates.** Represented by J. M. Sellers, R. J. Platt, G. M. Hogan, R. A. Van Houten and A. F. McCoole. Space 124.

Sherwin-Williams Company, The, Cleveland, Ohio.—Paints. Represented by Arthur Larkins, C. A. Prosius, W. F. Calender, T. A. Dorward and R. V. Goodremont. Space 15.

Signal Accessories Corporation, Utica, N. Y.—Switch adjusters; switch machine; signal and dwarf blades; adjustable rail braces; foundation extensions; screw locks and keys; connectors; blade cleaner; tape; protectors; **expanding guy anchor; latch lever locks; pipe carrier supports.** Represented by J. C. Edwards, S. G. Johnson, W. R. Burke and C. B. Semple. Space 113.

Simmons-Boardman Publishing Company, New York City.—Railway publications; Railway Age; Railway Engineering and Maintenance; Railway Signaling; Railway Mechanical Engineer; Railway Electrical Engineer; Maintenance of Way Cyclopedia; Boiler Maker; Marine Engineering; Books. Represented by L. B. Sherman, Henry Lee, C. R. Mills, Frederick H. Thompson, Fred Koch, B. J. Wilson, J. M. Rutherford, George W. Daves, J. G. Little, R. F. Duysters, J. P. O'Hern, W. F. Rench, R. V. Wright, E. T. Howson, W. S. Lacher, K. E. Kellenberger, Milburn Moore, D. A. Steel, J. H. Dunn and J. C. Emery. Space 46.

Snow Construction Company, T. W., Chicago.—water cranes; oil cranes; sand stoves; sand spouts; coaling fixtures; tell-tales. Represented by T. W. Snow, Barton L. Snow, A. T. Snow, A. B. Hodgson, W. A. Lathrop and Victor L. Walker. Spaces 107½ and 108.

Southern Signal Co., Inc., Louisville, Ky.—Rail contact controllers; trunking saddles; signal number plates; cable; posts; relay boxes; **cable terminal box; flashing light signal.** Represented by J. E. Clough, H. F. Delmanhorst and Louis R. Zehnder. Space 6.

Templeton, Kenly & Co., Ltd., Chicago.—Track, ballast and bridge jacks; **push and pull jacks.** Represented by C. A. Crane, P. H. McManus, J. L. Crowley, Wm. Simpson, J. Dolar, W. B. Templeton, H. W. Jacques, A. C. Lewis and G. L. Mayer. Space 32.

Torchweld Equipment Company, Chicago.—Gas welding and cutting apparatus; accessories and supplies; **gas pressure regulators.** Represented by W. A. Slack, Jerold Jensen, J. M. Cameron, Russell Smith and C. F. Egbert. Space 156.

Track Specialties Company, Inc., New York City.—Guard rail clamp; derailers spike; car stops; step joint; rail joint; rail braces; brace plates; guard rail brace; anchor plate; tie plates; slide plate and switch brace; track shim; rail bender; rail clips; tie dating nails; **tie check checkers; expansion shims; rail benders; track levels gauges.** Represented by J. A. Bodkin and W. B. Lee. Space 39.

Union Switch & Signal Company, The.—Swissvale, Pa.—Time release; track relays; line relay; interlocking relays; circuit controllers; facing point lock; automatic flagman; crossing bell; light signals; circuit controller; signal mechanism; track transformer; lighting transformer; adjustable reactor; **illuminated track model; relays; highway crossing signals; sectional steel relay cabinet.** Represented by W. P. Allen, C. R. Beall, G. A. Blackmore, W. H. Cadwallader, Roy Clayburn, J. P. Coleman, Aaron Dean, M. L. Gray, R. M. Gilson, H. W. Griffin, J. S. Hobson, L. F. Howard, L. V. Lewis, J. L. Loucks, Geo. Marloff, W. P. Neubert, M. McCready, J. E. Saunders, H. R. Sheene, W. W. Talbert, J. F. Talbert and S. J. Turreff. Spaces 66 and 67.

U. S. Wind Eng. & Pump Company, Batavia, Ill.—Tanks; pumps; valves; water columns; switch stands; tank hoops; model of steel tower to support tank. Represented by L. E. Wolcott; C. E. Ward, G. E. Vermilyer, J. P. Prindle, T. S. Daniels and W. S. Wood. Spaces 111 and 112.

Van Dresar, E. L., St. Paul, Minn.—Rail anchors; **grip plates.** Represented by E. L. Van Dresar. Space 168½.

Verona Tool Works, Pittsburgh, Pa.—Track tools; shop tools; nut locks; track levels and gauges; track jacks; rail joint springs; **track liner; fulcrum claw bar; track circuit bond.** Represented by W. W. Glosser, P. L. Laughlin and J. S. Wincrantz. Spaces 148 and 129.

Volkhardt Company, Inc., Stapleton, N. Y.—Water hydrants; water service supplies. Represented by Wm. Volkhardt and C. P. Cogswell. Space 160.

Warren Tool & Forge Company, Warren, Ohio.—Track tools; adzes; **spike mauls;** malleable castings; unions. Represented by H. C. Moll, M. J. Konold, J. D. Robertson, J. L. Foster and R. E. Bell. Spaces 222 and 223.

Waterbury Battery Company, The, New York City.—Cells and renewals. Represented by M. L. Martus, G. A. Nelson, O. B. Frink, G. A. Gaunt and S. J. Hough. Space 38.

West Disinfecting Company, Chicago.—Insector machines and materials. Represented by H. E. Daniels, W. L. Larry and E. C. Daniels. Space 171½.

Western Electric Company, Inc., Chicago.—Electrical Equipment. Represented by G. H. Porter, O. B. Duncan and H. C. Gump. Space 20.

Western Wheeled Scraper Company, Aurora, Ill.—**Working models of automatic compression lock air dump cars.** Represented by Jess Mossgrove, John G. Beck and J. E. Huber. Space 191.

Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa.—Motors; electrical equipment; **lighting fixtures for railroad yards.** Represented by P. H. Grenagle, C. B. Pence, W. W. Reddie, W. R. Jacobs, G. T. Keech, C. W. Regester and C. B. Gordon. Spaces 77 and 78.

Wharton, William, Jr., & Company, Easton, Pa.—Rails; switch points. Represented by H. F. McDermott. Spaces 199 and 216.

Wood Shovel & Tool Company, The, Piqua, Ohio.—Shovels; scoops; **new type handle; track shovel.** Represented by F. C. Brandenburg, Harry Barrett and C. L. Butts. Space 226.

Woolery Machine Company, Minneapolis, Minn.—Hand car engines; railway motor cars; power transmissions; **air compressor.** Represented by H E. Woolery, C. E. Berg and J. T. Stephenson. Space 204.

Wright Manufacturing Company, Lisbon, Ohio.—Chain hoists; trolleys. Represented by W. F. Wright, H. F. Wright, R. C. Blair, D. R. Smith and E. B. Low. Space 192½.

Wyoming Shovel Works, The, Wyoming, Pa.—Track shovels. Represented by S. H. Smith, J. M. Boyle, E. L. Rubyand H. T. Potter. Space 103.

Yale & Towne Mfg. Company, The, Stamford, Conn.—Electric trucks; electric hoists and chain blocks; door hardware. Represented by R. W. Chandler, H. R. Bunjay, Jr., H. H. Benton, P. A. Snyder and R. H. Irwin. Space 228.

* * *

River Bank Protection Comprises One of the Many Problems Imposed on the Railway Engineer

National Railway Appliances Association Holds Annual Meeting

CHARACTERIZING THE March conventions and the exhibit as "Inventories of Progress," L. W. Shugg, president of the National Railway Appliances Association, declared that they afforded the best opportunity for determining the requirements of future exhibits. This was the keynote of the address which he presented yesterday morning in opening the annual meeting of the National Railway Appliances Association when he called it to order in the grill room of the Coliseum at 11:05 a. m.

"Your officers," he said, "each year devote many days of their convention time to studying conditions at the exhibition. This enables them to provide better for the comfort and convenience of the entire membership of the association. The allotment of space," he continued, "is the biggest problem which confronts the officers of our association. As you all know, all of the space is taken up at the meeting held four months in advance of the exhibit. This means that it is in many cases impossible for the directors to comply with the demands made.

"As no practicable plan for enlarging the exhibit space has been developed it is absolutely necessary to make the most of all the space available. I desire to impress upon your minds the importance of properly utilizing the space allotted to you. When planning each year to participate, bear in mind the fact that the visiting railway men are giving up valuable time and spending considerable money to come here to inspect products of your manufacture. Therefore, to encourage such attendance and repay them for their efforts, you should have a complete display of your material rather than a general reception headquarters."

President Shugg's address was followed by an informal report by C. W. Kelly, secretary-treasurer, who explained that the affairs of the association were conducted on a budget basis whereby it was possible to maintain a reasonable balance between expenditures and revenues. The policy, he said, was to guard against a deficit and yet avoid an excessive surplus. The present indications point to a balance of a few hundred dollars after all bills have been paid.

Following the secretary's report the president called for the report of the Nominating committee, consisting of T. W. Aishton (chairman), J. B. Strong, T. W. Snow, and R. B. Fisher. Mr. Aishton responded by announcing the committee's selection for officers and directors as follows: President, A. J. Filkins, Paul Dickinson, Inc., Chicago; vice-president, W. J. Gillingham, Hall Switch & Signal Company, Garwood, N. J.; director (to fill unexpired term of Mr. Gillingham); C. S. Smart, W. & L. E. Gurley Company, Troy, N. Y.; directors for three-year term, L. E. Weidman, Frog Switch & Manufacturing Company, Carlisle, Pa., and J. W. Fogg, American Bolt Corporation (Boss Nut division), Chicago; secretary-treasurer, C. W. Kelly, Kelly-Derby Company, Chicago. A motion that the nominations be closed and that the secretary be instructed to cast a unanimous ballot for all names presented by the Nominating committee was duly seconded and carried and the officers and directors declared elected.

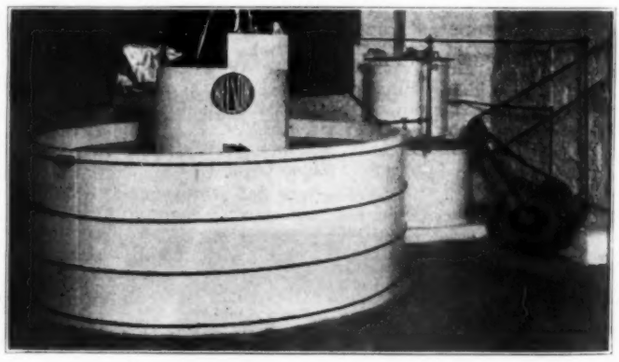
President Shugg raised the question of opening the Coliseum for several evening exhibits, stating that he had heard some criticism of the present plan, but the consensus of opinion expressed by a number of those present was that previous experience with evening exhibits indicated clearly that the attendance and interest did not warrant holding it open for more than one evening. Following a vote of thanks to the officers and directors for their work the meeting adjourned.

A. J. Filkins

The election of A. J. Filkins, president of Paul Dickinson, Inc., as president of the National Railway Appliances Association, marks the culmination of four years of constructive service with this organization, three as a director and one as a vice-president. Mr. Filkins has been in the railroad supply field for more than 20 years and has a wide acquaintance among railway and railway supply men. He was born in Chicago in 1882 and spent five years in the sheet metal and wholesale and retail hardware business with Hibbard, Spencer Bartlett & Company, and other firms. He then entered the employ of Paul Dickinson, Inc., as a draftsman in 1903, since which time he has been connected continuously with this company. He was appointed sales manager in 1909, was promoted to vice-president in 1913 and has been president since 1918.

Miniature Softening Plant Illustrates New Process

A MINIATURE WATER TREATING plant which not only shows how the machinery of the larger plants of the same type work but in which water treatment is undertaken identical with the course pursued in actual practice, is the latest innovation in this field of development as applied to railroads. This plant is permanently installed in the office of Joseph E. Nelson & Sons Co., 3240 South Michigan avenue, Chicago, where it is to be used partly for experimental studies in water treatment



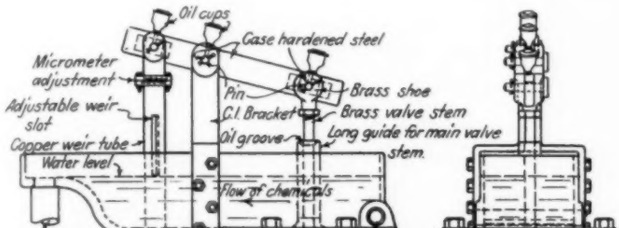
The Working Model of the Nelson Type Softener With Chemical Pump and Mixing Tanks

but primarily to illustrate the detail and demonstrate the operation at first hand of a new type of water treating plant, known as the Nelson Type Y plant, which this company has evolved for installation on railroads.

The miniature plant uses a settling tank seven feet in diameter and five feet high, half below and half above the floor level. It employs the familiar lime and soda ash process of treatment. It is distinctive, however, in a number of respects, among which are the method of preparing the chemical solution, the system of chemical proportioning, the method of mixing the chemicals with the water and, principally in the method of drawing off the treated water after settlement.

The chemical mixing equipment comprises two steel

tanks, one above the other, the upper or smaller tank being the mixing chamber in which the dry chemicals are introduced while the lower tank is, strictly speaking, a solution chamber in which the chemical solution is kept ready for use. In actual practice the mixing tank is four feet in diameter and four feet high, equipped with hinged metal covers. It is placed directly on the floor of the chemical storage room, where it is readily accessible to the operator. The solution tank is made larger in capacity and varies in size with the size of plant, being designed to hold a supply of chemical solution sufficient for 12 hours treatment. In actual installations this tank is ordinarily built so that the top is flush with the floor line, in order to have the tank completely below the mixing chamber. The agitating system consists of paddles which revolve horizontally in each tank, thus affording means of mixing the dry chemical with water in the one



The Details of the Chemical Proportioning Device Showing the Operation of the Measuring Weir and the Diagonal Slots on the Inlet Orifice

tank and maintaining a uniform solution in the other. These paddles are driven by an electric motor through a system of bevelled gears, so arranged that the agitation in the mixing chamber can be discontinued without interfering with the operation of the agitators in the solution tank. The chemical solution is prepared by filling the mixing tank with water and dumping in the pre-determined quantity of lime and soda ash, which mixer is then discharged into the solution chamber through a valve in the bottom. An advantage of this arrangement is that a batch can be prepared well in advance of the time when it is required. It also avoids the troubles which often result where dry chemical is added directly to the solution tank.

The chemical solution is pumped to the top of the treating plant by means of a small triplex pump which discharges a constant stream of the solution into the proportioning device. The illustration shows the construction of this proportioning device which consists substantially of a metal basin where a constant level of the chemical solution is maintained by means of an overflow pipe at one end through which excess chemical automatically flows back into the solution chamber. The flow of chemical into the mixing chamber is accomplished and controlled by means of a weir, this consists of a vertical slot in a tube which is suspended from one end of a rocker arm, and extends down through the constant level chamber. The quantity of chemical which passes from this chamber through this weir and down through the tube into the mixing chamber depends upon the distance which the weir is raised or lowered by a plunger on the other end of the rocker arm. This plunger fits into the orifice through which the incoming untreated water reaches the mixing chamber. This orifice has a number of spiral slots, so arranged as to give a swirling motion to the water and at the same time produce a displacement of the plunger directly proportionate to the quantity of incoming water.

The chemical solution mixes with the incoming water in the box immediately below the constant level reservoir, after which the treated water passes through a horizontal trough where the flow is intercepted, for the purpose of mixing, by a series of baffle plates. It then drops successively over three tiers of wooden diaphragms in the upper portion of the downcomer. This arrangement of baffle plates and wood diaphragms is a substitute for mechanical agitation. After passing over the last diaphragm, the water procedes to the bottom of the tank where the downcomer pipe is supported 18 in. above the floor line to permit the water to emerge uniformly on all sides. The water then rises in the settling tank at the specified rate of upflow until it reaches the top, where it is drawn off by means of a trough. This trough is level on top and extends entirely across the center of the settling tank. This feature of the tank is given special emphasis by reason of the means it affords of insuring a uniform draw-off from all sections of the tank, instead of promoting cross-currents which prevent proper settlement of the water and the full utilization of the settling space.

In the working model the settling tank is of wood while the sludging system consists of a grillage of perforated pipes in the bottom of the tank, controlled by two quick opening valves. In actual practice this system is adapted equally well for steel tanks with or without conical bottoms.

The installations of this system thus far include a 50,000 gal. per hour plant at Clinton, Ill.., 25,000 gal. per hour plants at Decatur, Ill., Haldane, Penola, Galena and Council Bluffs, Ia., and 30,000 gal. per hour plants at Fort Dodge, Ia., and Amboy, all on the Illinois Central, together with a 25,000 gal. per hour plant on the Baltimore & Ohio at Audreydale, Ohio. The results obtained from these plants indicate that the system is economical and efficient in the character of results obtained in treatment.

Gearless Switch Stand Requires No Latches

EFFORTS MADE by one manufacturer to increase the life of its switch stands and to improve upon the serviceability of this equipment in general has resulted in the design of a switch stand which is entirely free from gears and which is also said to dispense with the need of switch latches or other locking devices. In the place of gears the new stand, which is of the ground throw type, employs a system of lever cranks, the arrangement being such that by throwing the switch lever, a small lever on the inside of the stand engages a bracket and forces it along guide rods in a forward direction. This bracket, in turn, carries a pinion which fits into a slotted crank on the operating shaft, by means of which the switch connecting rod is moved backward or forward, as the case may be.

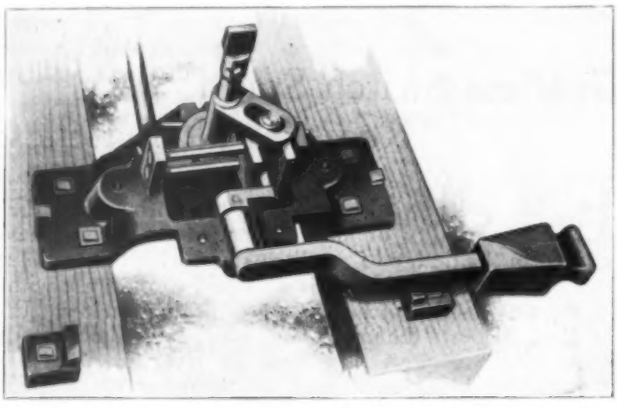
The operating shaft is a one-piece steel casting having no bolts, pins, keys or set screws in its construction, It works on a steel bearing which is fitted rigidly into the malleable iron base. The character of this bearing which brings steel in contact with steel rather than in contact with malleable or cast iron is considered an

important factor in promoting longer life. The operating bracket is also made of steel, as well as the bars which guide its movement. As a further protection against wear and also for the purpose of insuring ease of operation, both the lever crank which forces the operating bracket back and forth and the pinion on the bracket which engages the operating shaft are fitted with steel roller bearings.

Not only is this construction said to afford longer life to a switch stand than is usual, but to afford the

Applying a Breakable Crank to the Duro Stand

further advantage of avoiding the lost motion in switch stand mechanism commonly experienced where the mechanism employs gears. Most prominent of the advantages claimed for the new stand, aside from its long life, is the dispensing with the need for switch latches to prevent the switch stand lever from opening under traffic. The new stand is said to require no latches because, when the switch is closed, the throwing lever is in a position well past dead center, which locks



The Duro Stand Is Gearless

the stand against any possibility of its opening. This adapts the switch stand practically for busy railroad yards in so far as it permits more rapid switching of cars than can be done where switchmen are required to open or close foot latchets or other locking devices.

The new stand is called the Anderson Duro switch stand and is a development of the American Valve & Meter Co., Cincinnati, Ohio. As with the Economy switch stand, manufactured by this company, the new switch stand may or may not be equipped with breakable cranks, the latter consisting of a crank so designed as to embody the weakest part of the entire switch stand. As a result of this construction the stand is protected from injury in yards when switches are run through since the crank breaks first, whereupon new cranks are quickly applied from the outside, as shown in the illustration. Switch stands of this type are in test service on several railroads.

A New Triangular Light Signal

A DEMAND FOR MORE compact color-light signal units so that more than one may be placed conveniently on the same pole caused the Union Switch & Signal Company to modify a former triangular design to suit the present day requirements. The lamp units of this new signal, which is known as the Style-TR, are aligned with respect to the finished mounting surfaces and when placed in the triangular cast iron case, the

Rear View of Triangular Light Signal

main beams of light are parallel. Vertical and horizontal alignment of the complete light unit is accomplished by means of the combination adjustment and supporting brackets which secure the case to the mast. Provision is made for telescopic alignment of the light unit to bear on the desired point, however, it is possible to secure good range by using ordinary alignment methods.

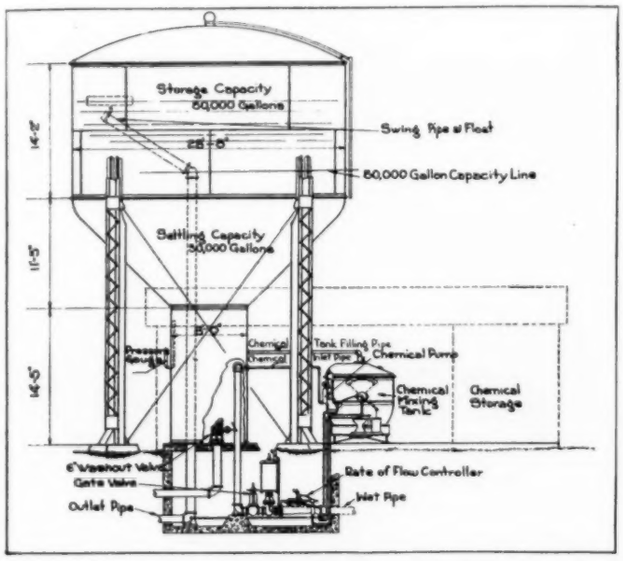
The lamp unit consists of the doublet lenses, the outside member of which is 8⅜ in. in diameter, a rebased lamp held in a receptacle, the position of which is definitely located with respect to the lenses, and a supporting casting. Lamp bulbs may be renewed without disturbing the optical precision of the adjustment.

The cover design of the back of the case is unique as ready access may be had to the lamps and terminals (illustrated in the rear view shown) and it is impossible through negligence to leave the cover off of one lamp unit without also leaving it off the other two, thus assuring that no one indication may be improperly displayed

on account of a strong light behind the signal without the other two lenses receiving the same illumination. The three covers are carried on a centrally supported spider. As the lower one is the heaviest, there is no chance of accidental exposure if the maintainer should fail to secure the hasp.

New Type Water Softeners Installed on North Western

A CONICAL BOTTOM steel tank, the total absence of the familiar mixing chamber and automatic control of the inflow are features of the Horton type water softening plant which has recently been developed by the Chicago Bridge & Iron Works, Chicago, incident to the entrance of this company into this field of activity. Five plants of this type have recently been installed on the Chicago & North Western, where they constitute a marked departure from the prevailing practice in treating plant designs intended for general use.



A Sketch of the Horton Type Softeners Showing Interior Construction

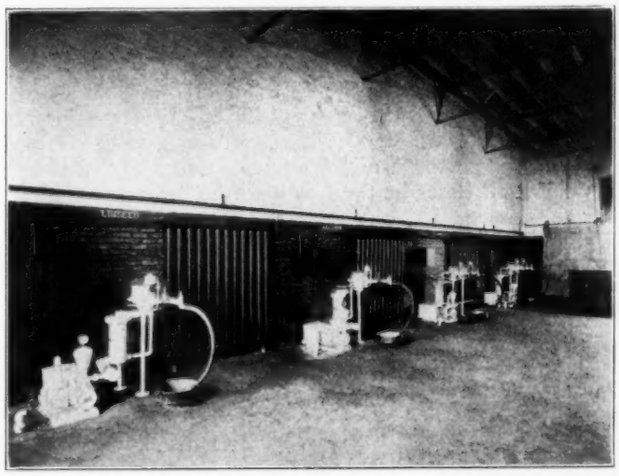
The plant at Laurens, Iowa, the first of the five plants to be placed in operation, is illustrative of the character of construction and the principle under which the new type functions. This plant is of the continuous type and is constructed to treat water at a maximum rate of 12,500 gal. per hour. The conical bottom steel tank is of 100,000 gal. capacity, the upper half of which fulfills the requirements of storage. Instead of entering the plant at the top, as is usual in water treating practice, all water enters this type tank through the bottom, and is discharged at a point in the mud drum about eight feet above the ground.

The chemical mixing and proportioning system is that of the International Filter Company. This is installed on the ground level and discharges a constant flow of chemical directly into the raw water before it emerges from the inlet pipe. The inlet pipe is provided with a special elbow designed to obstruct the flow of the incoming water so as to give it a swirling motion in the tank, no other form of agitation being provided.

Upon emerging from the inlet pipe the treated water passes directly into the settling portion of the tank. In order to utilize the top half of the tank as a storage reservoir and at the same time to draw off all water from the top level, the outlet pipe is equipped with a swinging outlet. Precipitates are removed from the mud drum in the tank through a six-inch washout valve in the bottom. Aside from the total absence of a mixing chamber and the familiar method of agitation by mechanical means, neither of which is considered essential by the manufacturers, this plant is distinctive in the method of controlling the inflow of water. In this plant the effort is made to obtain a constant rate of inflow by means of a controlling device installed on the inlet pipe, the purpose of which is to allow only a predetermined supply of water to enter the softener, regardless of the pressure on the supply line. The chemical feed is likewise regulated so that it will deliver a constant amount of chemical solution as long as the water supply remains equal to or greater than the rate at which the controller has been set. As a safety precaution the chemical system is equipped with a controlling mechanism which maintains a proper ratio of chemical to incoming water will if the water supply inlet pipe should fall at any time below the rate at which the controller is set to operate.

Electrically Controlled Oil Barrel Filling Equipment

ONE OF THE PROBLEMS which arises at any point from which oil is distributed is the filling of oil barrels for shipment to outlying points. To solve this problem the Chicago, Rock Island & Pacific has installed a novel type of oil handling equipment at Shawnee, Okla. and also at Silvis, Ill., consisting of a series of rotary power pumps. The units at Shawnee,



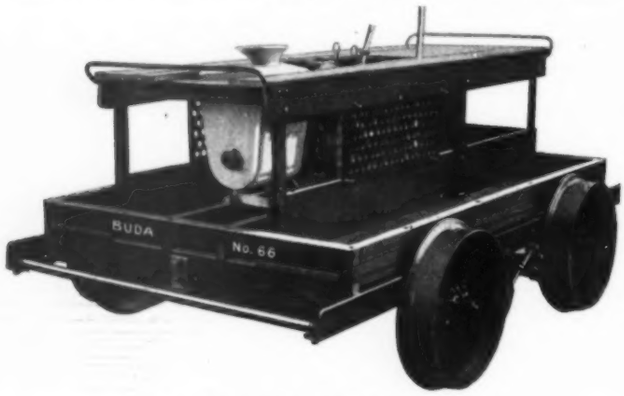
An Interior View of the Barrel Filling Station at Shawnee, Okla., Showing the Several Automatic Filling Pumps

which are four in number, shown in the illustration, consist of electrically operated rotary power pumps large enough to fill a barrel in 1½ min. Combined with each pump is an automatic registering meter which is not only designed to afford a pre-determined delivery but also to furnish a permanent record of the total number of barrels filled. So far as is known, this is the only meter of the kind in use. Equipped with these units it is possible to fill an unusually large number of barrels, using but one or two extra men whose work consists simply of rolling the barrels in position to be filled and

loading them into the car. The pumps are products of the S. F. Bowser & Co., Ft. Wayne, Ind.

A New Buda Motor Car

AMONG THE NEW developments which are being shown at the Coliseum this year for the first time is a 6-8 hp. single cylinder, two cycle belt-driven motor car which the Buda Company, Harvey, Ill., is building for general section and light bridge gang service. The car will carry eight to ten men and has power

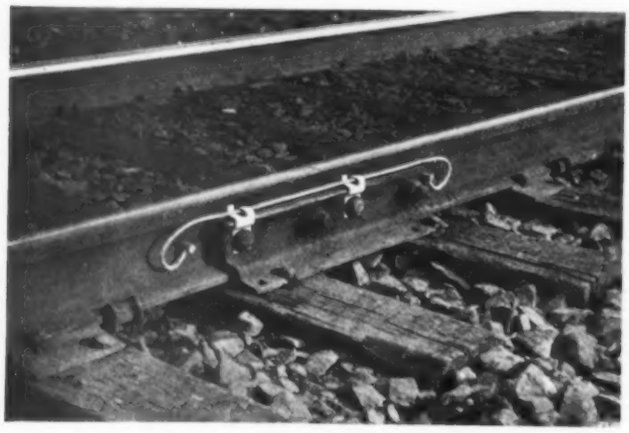


The New Buda "66" Motor Car

sufficient to haul trailing loads. It is equipped with a free-running, reversible engine which is started by a crank. The frame is of combination steel and wood construction. The car is provided with standard Buda equipment, including Hyatt bearings and weighs less than 1,000 lb. ready for service.

An Improved Bond Wire Protector

FOR SEVERAL YEARS it has been the practice, in connection with bond wire protection, to use a type of protector which required that the track bolt should at all times be tight to hold the protector securely



A View Showing How Bond Wire Is Held in Place by the New Form of Protector

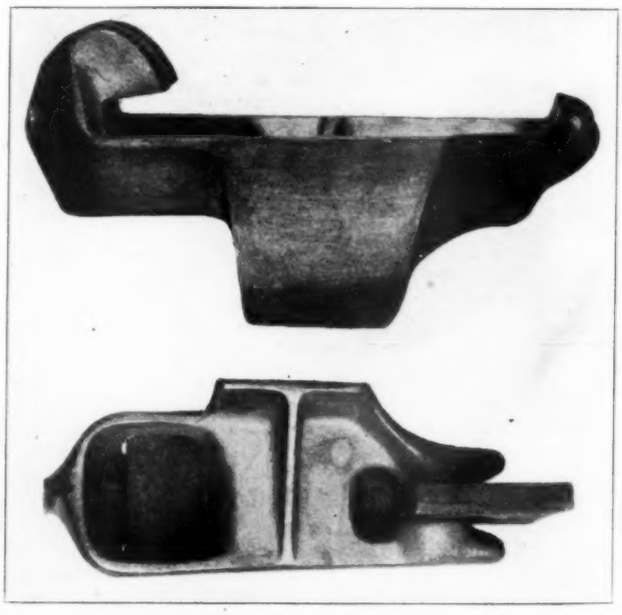
against the splice bar so that the top of the prong engaging the bond wire would be in contact with the slide bar at all times, thus preventing the bond wire from slipping out. It frequently happens, however, that the prong of this wire protector is accidently bent away from the slide bar or that the bolts become loose, thereby permitting the wire to become disengaged from the protector.

An improvement over this form of protector is found in a new design which consists of two prongs instead of one, with the prongs bent in such a way as to carry the bond wire between them. The ends of the prongs, moreover, overlap so that when the protector is in place the bond wire cannot become disengaged. To apply or remove the protector from the wire it is necessary to give the protector a quarter turn, otherwise the wire cannot pass in or out of the prongs. This type of protector does not depend for its effectiveness upon the prong coming in contact with the splice bar since it holds the bond wire within itself. This design has been developed by the P. & M. Company, Chicago.

A Rail Anchor That Snaps On

SEVERAL RAILROADS HAVE RECENTLY made test installations of a newly developed rail anchor which has been named the "Snap On" by reason of the distinctive method of its application. The new anchor is in reality a modified form of the efficiency anchor, the objective being the elimination of the necessity of drilling the rail, as was the case with the earlier form.

The Snapon Efficiency rail anchor (this being the complete name of the new device), consists of two parts, a



Side and Bottom Views of the Snapon Rail Archer

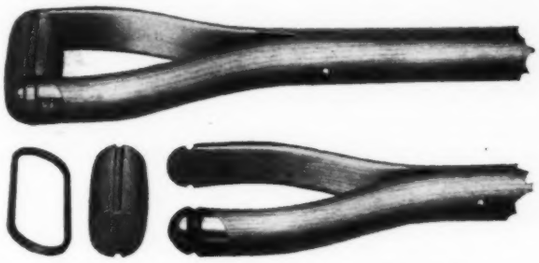
malleable clamp and a steel locking device. The malleable clamp has a jaw on one end which fits over the rail base and a deep faced lug on one side to engage the tie. The clamp is applied by fitting the jaw over the rail base and driving the casting against the rail until the two lugs on the other end of the casting clear the under side of the rail base. This having been done, the clamp is ready for the locking device, which consists of a steel plate having a hook which engages the under side of the casting. This plate is applied by first inserting it into the slot of a wrench provided for the purpose, and then inserting the hook in the plate in the seat on the under side of the

clamp. The plate or dog is then forced over the rail base, the operation being completed when the whole length of the straight arm of the dog is in contact with the upper surface of the rail base.

These rail anchors are applied by one man. Their holding power is said to not be affected by vibration or rail movement and they are claimed to be efficient after repeated applications. One of the wrenches referred to is furnished with every 1,000 anchors sold. The Anchor Company, Milwaukee, Wis., is the distributor of the new anchor.

A New Shovel Handle

THE WOOD SHOVEL & TOOL COMPANY, Piqua, Ohio, has recently developed what is considered to be a marked improvement in its shovel handles. This improvement takes the form of a new type of handle grip. As the illustration shows, this grip consists of a block of wood which is held between the prongs of the shovel handle by a steel band instead of by a bolt passing through it. To accommodate this band the grip is grooved on each side and the prongs of the shovel



Details of the New Wood Shovel Handle

handle are reinforced at the ends by a corrugated steel cap. The band is shrunk on the grip in the same way as the hub bands were shrunk on the familiar wagon wheel hubs, the effect of which is to produce a compression that will prevent any loosening of the grip. In addition to this feature, the hand grip is inserted so that the grain of the wood is perpendicular to the blade of the shovel, which has the effect of increasing the strength of the grip. Another advantage claimed for this style of grip over the old fashion wood "D" handle, is that there is no checking or splitting of the grip with attendant pinching or other injury to the hands.

The prongs of the shovel are carried up full size to the ends with no rivets to weaken either the prongs or the grip. The design is such, moreover, that there is practically no metal in contact with the hand to cause annoyance in cold weather. The grip is also made wider than that of standard handles, thus allowing more freedom for the hand.

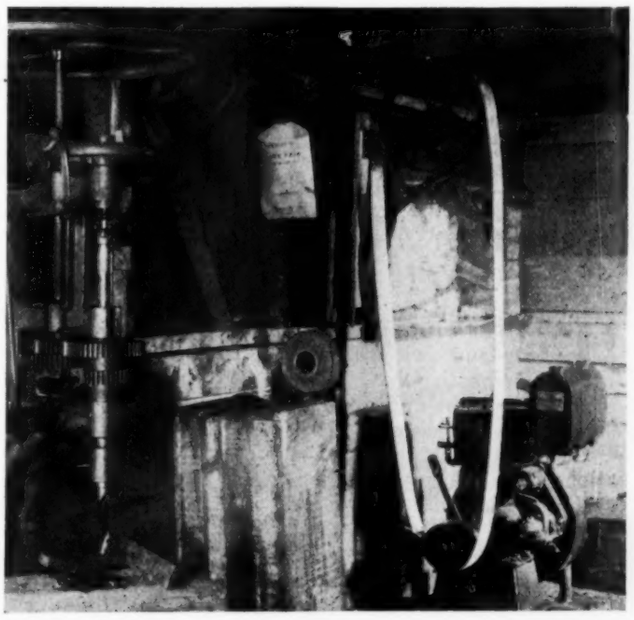
One Engine Does the Work of Many

ONE OBSTACLE to the general application of power equipment to maintenance of way and structures work has resulted from the feeling on the part of some railway officers that this may easily result in the acquisition of a large amount of miscellaneous equipment which will be idle a large part of the time because of a lack of sufficient work to keep it steadily employed. This is particularly true of the power units required for the operation of concrete mixers, trench pumps, woodworking tools, grinders, small air compressors, etc.

For this reason particular interest has been taken in the various adaptations of the gas engine developed by the New-Way Motor Company of Lansing, Mich., as

A Centrifugal Pump Direct Connected to the Engine for Foundation Excavation Work

illustrated in the photographs. This engine is a lightweight, air-cooled motor designed for operation by either gasoline or kerosene. It is arranged as a compact unit with all of the working parts enclosed to make it dirt and dust proof. It is equipped with a Bosch mag-



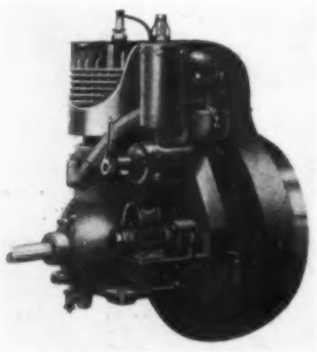
This Engine Is Used to Supply Power for a Small Shop Assembled in a Box Car

neto and has a float feed type carburetor. It is intended primarily for constant speed operation under varying loads and is provided with an automatic throttle governor for this purpose, affording a variable power output ranging from two to five horsepower. However, as an indication of its flexibility attention is directed to

the fact that this engine has been adapted to use on industrial trucks and narrow-gage construction locomotives manufactured in France.

One of the foremost applications of this motor, which is of definite interest to officers of the maintenance of way department, is its use in driving a dynamo generating current for electric tie tampers. Current supplied in this way may also be used for operating other electric tools such as drills, grinders, nutters, etc.

Another use to which the motor is especially adapted is to supply power for small maintenance of way or



The New-Way Engine

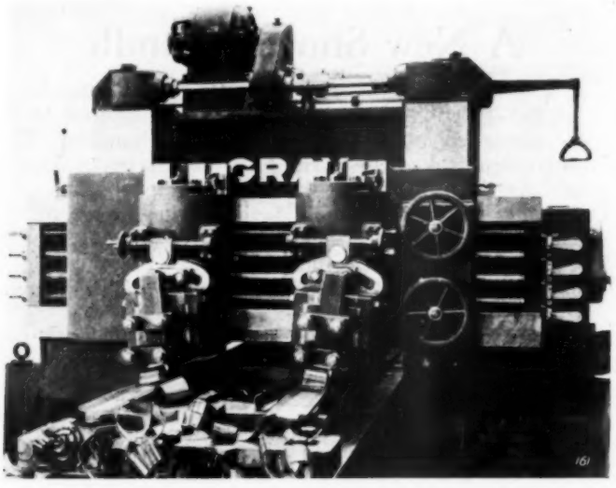
water service shops located at division headquarters or installed in cars that can be moved over the division to meet the requirements of the work. One instance of an application along this line is illustrated in one of the photographs which shows a car fitted up by the signal department of the Chicago, Burlington & Quincy with a new-way engine to supply power for the operation of drills, pipe cutters and threaders, a small lathe, etc. Another photograph shows the engine direct-connected to a centrifugal pump for use in foundation excavation work. This same application has also been worked out with either a belt or a gear drive. Other applications which may be mentioned include the operation of concrete mixers, saw tables, winches and hoists and air compressors.

A Switch Planer for Heavy Service

TO MEET THE DEMANDS of modern requirements in frog and switch shops, the G. A. Gray Company, Cincinnati, Ohio, has brought out a switch planer of heavy weight and great power, that is especially designed for this class of work.

Switch work is practically confined to two major operations, consisting of feeding two cutter heads toward each other in order to take simultaneous cuts on the sides of two rails and feeding the tools directly down into the flange of the rails to cut off the flanges as illustrated in the photo. In the first operation the operator depresses the highest and lowest clutch levers at the right-hand end of the cross rail of the planer, thereby throwing both the traverse and manual feed levers on the end of the cross rail into engagement with the crossfeed screws. Then by turning the manual-feed crank, the desired amount of feed is easily obtained, both cutter heads moving toward each other. When the cut has been completed, a single pull on the traverse lever, located directly underneath the manual feed lever, starts the traverse motor and moves the heads apart quickly, ready for the next cut.

To change over to the second operation of flange cutting, the second and third levers at the end of the cross rail are depressed, and the others released by touching buttons provided for that purpose. Turning the manual-feed lever will then give a feed of both tools down toward the rail, while a single motion of the traverse lever brings both slides back quickly to the starting position. It will be noted that the change from one operation to the other is practically instantaneous without great effort on the part of the operator, who, with only two control levers to manipulate, can keep his eyes constantly on the tool and



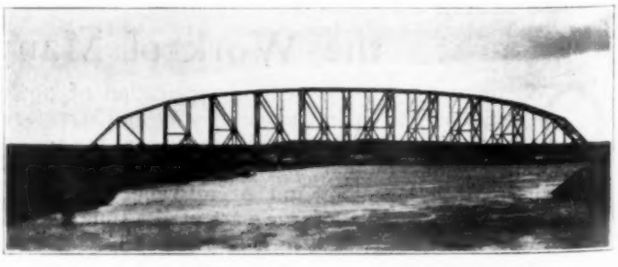
The Planer Works on Two Rails at Once

work. If desired, either cutter head can be controlled independently.

Steel gears running in oil are used entirely in the drive to the table. The bed is cast solid on the bottom to form an oil tank and to tie the walls together. The bed has four walls, two on each side of the gears, and each double wall is tied together by crosswise webs, so as adequately to support the bearings mounted in the walls and make the entire bed sufficiently stiff between the housings and throughout the gear space to absorb vibration.

Not only do the gears run in oil, but a flood of oil is also pumped to each bed vee and to the drive-shaft bearings. At each end of the bed the oil passes through a strainer plate into a settling basin, from which it returns to the central reservoir. From this it is passed through a second strainer and filtered before being returned to the vees and bearings.

In a test conducted on a planer of this design, the flanges of two 100-lb. rails of 0.70 per cent carbon, open-hearth steel were cut through with five strokes of the planer. The width of the cut varied from 0 to 3 in., the feed was about ⅛ in. and the cutting speed 25 ft. per min. The range of cutting speeds available on the machine is from 25 to 50 ft. per min.



The Tanana River Bridge on the Alaska Railway